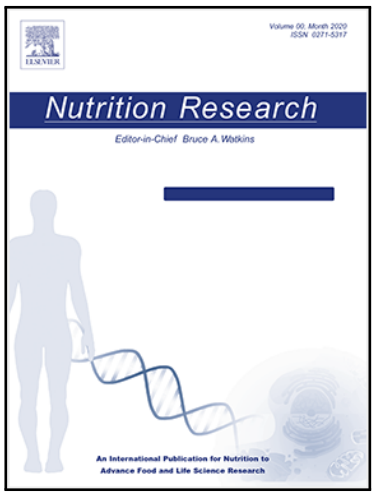

Fostering wellbeing and healthy lifestyles through conviviality and commensality: Underappreciated benefits of the Mediterranean Diet.

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Highlights

- Often-neglected features of healthy diets is the preparing and sharing of meals.
- Conviviality can be distinguished from commensality.
- Conviviality is the quality of being friendly and lively.
- Commensality is the practice of eating together.
- Conviviality is a mediator of health benefits.
- The release of neurochemicals, such as oxytocin and endorphins, might explain such benefits.
- We call for public health initiatives to promote the sharing of meals.

Fostering wellbeing and healthy lifestyles through conviviality and commensality: Underappreciated benefits of the Mediterranean Diet.

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Competing Interests

None

Abstract

Among the often-neglected features of healthy diets, such as the Mediterranean one is the preparation and sharing of food, which is (or was) done in a social environment governed by social rules rather than by time constraints. The act of eating is a daily human practice that is not limited to meeting nutritional and energy needs but also involves a constructed social dimension of sharing meals that is part of the process of human civilisation and food cultures around the world.

In this narrative review we outline the importance of conviviality in driving part of the health effects of healthful diets, with special reference to the Mediterranean diet. Based on the available evidence, we suggest that public health initiatives (such as nudging to promote conviviality) to improve people's eating and living styles, reduce loneliness, and promote the sharing of meals could improve health. Interventions aimed at directly increasing/improving people's social relationships, networking, and conviviality can - directly and indirectly - improve both psychological well-being and general health.

Keywords: Mediterranean diet; conviviality; commensality; health; heritage, culture; joy.

1. Introduction

A healthy and sustainable diet is an important contributor to human health [1]. Therefore, much research is devoted to investigating what would be the optimal nutritional profile that increases longevity and minimizes morbidity [1]. The Mediterranean diet is an example of an adequate proportion of plant-based proteins, healthy fats, fruits and vegetables, and high-quality carbohydrates, encompassing a diverse range of grains, including whole grains, legumes as well as other complex carbohydrates like pasta [2, 3]. In addition, the Mediterranean one is sustainable [2] and has been linked with longevity of the inhabitants of the Mediterranean basin, due also to other lifestyle factors such as physical activity (field work and other day to day physical activities), lower exposure to pollution typical of industrial cities [4], or the use of daytime naps (in Spanish: siesta) [5]. Adherence to the Mediterranean one has been positively related to low prevalence of chronic degenerative diseases and to psychological well-being [6, 7] and those who have a higher level of adherence to Mediterranean one also had lower levels of both anxiety and depression [8]. Indeed, among the features of the traditional Mediterranean one [9] is the preparation and sharing of food, which is (or was) done in a social environment governed by social rules rather than by time constraints [10].

The act of eating is a daily human practice that is not limited to meeting nutritional and energy needs but also involves a constructed social dimension of sharing meals that is part of the process of human civilisation and food cultures around the world. This phenomenon, also known as commensality, is defined as the act of eating together, the act of sharing a meal, with reference to the etymological origin of the Latin word "*mensa*", which precisely means living together at the table [11]. Commensality is a term widely used in the literature and can be defined as the act of eating with other people or, more literally, eating at the same table [12, 13]. The term encompasses any form of sharing food: from a formal dinner party to a festive gathering to an ordinary family meal [14]. Across the continuum of human evolution, communal dining has remained a deeply rooted social practice. This phenomenon can be traced back to our primate predecessors who

engaged in the sharing of sustenance. In the early stages of human development, the synergistic pursuit of hunting and the communal preparation and consumption of meals emerged as a key factor in enhancing group success and security [12]. Additionally, agricultural communities have historically demonstrated collaborative efforts, ranging from collective farming to the formation of labour groups aimed at facilitating various tasks, thereby rendering them more feasible and enjoyable [15]. Eating together serves as a multi-dimensional and intricate mode of expressive and meaningful communication. It transcends mere food consumption derived from the immediate environment and rather represents a highly intricate social phenomenon. Its effectiveness lies in its dual role as both a social tool and a mnemonic tool [16]. Also, eating together is often proceeded with cooking together at least some parts of the meal - taking an active part in meal preparation.

Conviviality can be distinguished from commensality, which in some of its more formal forms can also be an expression of hierarchy and dependence rather than altruistic and universal reciprocity. In this narrative review we outline the importance of conviviality in driving part of the health effects of healthful diets, with special reference to the Mediterranean diet.

2. Conviviality in the Mediterranean diet. Health benefits of eating together.

Conviviality and pleasure play a role in contributing to its health benefits yet are often overlooked (by the most employed scores, i.e. the MEDAS [17, 18] and the Mediterranean Diet Score [19]) features of the Mediterranean diet. This emphasis on the enjoyment of meals distinguishes the Mediterranean diet from other dietary traditions, categorising it not only as 'convenient' but distinctly 'appetising'. For this reason, other methods of assessing adherence to the Mediterranean diet consider conviviality, e.g. the widely used MEDLIFE index, which is based on the Pyramid of the Mediterranean Diet proposed by the Spanish Foundation for the Mediterranean Diet [20]. The Mediterranean Diet Pyramid is interpreted from a total of 28 MEDLIFE index entries, divided into three blocks, with each entry receiving a score of 0 or 1 [21]. While the second block of the MEDLIFE analyses seven questions on Mediterranean dietary habits, the first block

assesses 15 items on the frequency of food consumption in the portions provided. Six elements related to relaxation, social habits, physical activity, and conviviality are evaluated in the third block. Extending this perspective, palatability and pleasure are key components that significantly support the promotion of conviviality within the framework of this diet. In line with this view, commensality is recognised as an intrinsic cornerstone of the Mediterranean diet. The act of sharing meals around a table and eating together has been recognised by various scholars as a fundamental social phenomenon that is inseparable from the contemporary interpretation of the Mediterranean diet [7]. The Mediterranean food model is, thus, at least in part characterised by the cultural value of conviviality, which emphasises the pleasure derived from shared food experiences. Mediterranean dietary habits refer to following customs and habits around meals, such as physical activity, rest, and social habits and conviviality (see above). In a study [22], the authors report a negative correlation between mortality risk and adherence to the Mediterranean dietary habits. It was discovered that, in comparison to those with lower MEDLIFE scores, those with higher scores had a 29% lower risk of all-cause mortality and a 28% lower risk of cancer mortality [22]. Lower risk of death from all causes and cancer was linked to independent adherence to each MEDLIFE category. The category that was most closely linked to these reduced risks - as well as a lower risk of cardiovascular disease mortality - was "physical activity, rest, and social habits and conviviality [22].

The Mediterranean diet is often praised for its 'tastiness', with a strong emphasis on the use of local ingredients and adherence to traditional recipes [23]. From a public health perspective, this diet recognises that sustainable dietary recommendations must be inherently enjoyable. This approach stands in stark contrast to dietary advice in some countries, for example, where prevailing guidelines often revolve around rigid rules, reductions in food groups and a sense of deprivation, with minimal regard for aspects of taste, culinary heritage, shared meals or the simple pleasure of eating [24]. A higher adherence to the Mediterranean one has been associated with higher levels of happiness in a cohort of Spanish adolescents [6], which could be partially attributed to sharing and

conviviality [6] in addition to the high consumption of fruits and vegetables [25, 26]. Similarly, another meta-analysis of 22 studies reported that higher adherence to a Mediterranean one in Mediterranean and non-Mediterranean countries was associated with a lower incidence of a series of mental issues, including a 30% reduced risk for depression and a 40% reduced risk for cognitive impairment [27]. Experimentally, sharing meals can also be an efficacious and accessible treatment strategy for the management of depression [28]. These data dovetail with those of Reddy et al., which add further, experimental evidence of the beneficial and even therapeutic actions of the Mediterranean diet [29].

In fact, a lunch/dinner table is the place where social bonds are strengthened, where cultural exchange continues [30], and where meeting others allows intergenerational exchange. Sharing meals at the same table is indeed a significant cultural occasion that can foster complementing understandings between generations [30]. These symbolic aspects are particularly evident in the rituals associated with festivals and community events [14]. From UNESCO, "*Eating together is the foundation of the cultural identity and continuity of communities throughout the Mediterranean basin. It is a moment of social exchange and communication, an affirmation and renewal of family, group, or community identity. The Mediterranean diet emphasises values of hospitality, neighbourliness, intercultural dialogue and creativity, and a way of life guided by respect for diversity. It plays a vital role in cultural spaces, festivals, and celebrations, bringing together people of all ages, conditions, and social classes*" [31].

The sharing of food and conviviality is particularly evident in the sacred and ritual dimensions of celebrations, religious festivals, rites of passage, pilgrimages, and secular collective celebrations [32]. Festivals are very popular events, an opportunity to share a meal in an atmosphere of celebration, laughter, and conviviality [32].

Commensality and conviviality, essential aspects of human dietary practices, manifest in diverse forms across the globe, reflecting cultural, social, and ecological nuances. In traditional Mediterranean diets, commensality serves as a cornerstone of social cohesion. Research indicates

that shared meals in this context are associated with increased adherence to the Mediterranean diet, fostering a sense of conviviality that positively influences dietary patterns [24, 33]. In contrast, the Western diet and lifestyle are often characterized by fragmented eating patterns, leading to an overall low nutritional quality: the prevalence of individualized, fast-paced eating habits in Western societies has been linked to a decline in commensality and diminished conviviality, contributing to adverse health outcomes [34]. Adherence to a Mediterranean-type diets is moderate with, unfortunately, a notable reduction over the past ten years. Compared to other regions, European countries - primarily those in the Mediterranean - exhibited higher levels of adherence. Geographical analysis showed that, globally, adherence to a Mediterranean-type diets is correlated with socioeconomic class and geographic location [35].

In the Asian context, particularly in Japan, the traditional dietary model emphasizes communal dining and a variety of nutrient-dense foods such as fish, rice, and vegetables. Commensality in Japanese culture is intricately woven into daily life, promoting conviviality and reinforcing social bonds [36]. Epidemiological investigations into the so-called Blue Zones, regions with exceptional longevity, reveal a common thread of robust commensality and conviviality [37]. The dietary patterns in these regions, characterized by high prevalence of plant-based foods, emphasize the importance of shared meals and communal engagement, contributing to overall well-being [37].

3. Conviviality and health

Fostering appropriate social connection has important implications for human well-being, conferring protective factors that are associated with increased survival odds (by 50% as reported in some studies [38]). The negative effects of social isolation (exemplified by the Covid-19 lockdowns [39, 40]) led the World Health Organization to declare loneliness a major health concern, especially among the elderly [41] and the U.S. Surgeon General published an advisory underscoring loneliness as of epidemic proportions in the United States of America in 2023 [42, 43].

Conviviality and health are closely related concepts, as social connections and positive interactions with others can have a significant impact on overall well-being [44]; it involves building and maintaining strong relationships, fostering a sense of community, and creating a supportive environment where individuals can thrive. Conviviality can be beneficial to health in many ways, including reducing stress, improving mood, improving nutrient intake, and increasing feelings of happiness and well-being. Hence, food conviviality can have a significant impact on health, as social interactions/social facilitation and positive experiences around food can lead to better dietary choices and improved overall well-being. It is necessary to mention that although some evidence suggests that eating together may increase portion size [45, 46], the possibility of compensation of energy intake throughout the rest of the day should be considered.

In 2013, a comprehensive review [47] reported that the Mediterranean diet was associated with a reduced risk of cancer, and suggested that conviviality and social interaction during meals may partially explain this association, although experimental evidence is lacking. Indeed, sharing meals with family and friends was a key aspect of the original Mediterranean diet and may have contributed to its health effects. A recent study [48] investigated the relationship between the Mediterranean diet and cardiovascular disease in the Spanish population, and confirmed that adherence to the Mediterranean diet was associated with a lower risk of cardiovascular disease and that lifestyle factors, including conviviality, may contribute to this association.

People who have strong social connections and a sense of community are generally healthier than those who are socially isolated [49]. Social support has been linked to a lower risk of depression, anxiety, and other mental health conditions, as well as a lower risk of physical health problems such as heart disease, stroke, and diabetes [49].

Of course, what we discussed above is not specific to the Mediterranean diet and can be observed worldwide when strong social bonds are formed at mealtime. In addition, conviviality can also promote healthy behaviours such as physical activity, healthy eating, and obtaining sufficient sleep. When people are surrounded by others who prioritize health and wellness, they are more

likely to adopt these behaviours themselves. Additionally, when people eat with others, they tend to consume a greater amount of fruits and vegetables [50] suggesting that increasing fruits and vegetables may displace unhealthy foods from the diet.

In addition, food conviviality can also encourage people to try new and healthy foods. Sharing meals with others can expose individuals to different cultural cuisines and promote a diverse and balanced diet.

There is a growing body of research supporting the connection between food conviviality and health outcomes (Table 1). For example, but not limited to, Chae et al. [51] found that adults who eat alone tend to consume fewer fruits and vegetables and more fast food than those who eat with others.

Social context exerts a profound influence on eating behaviour. When in the company of others, our dietary choices and patterns diverge significantly from those when we dine in solitude. Additionally, our food preferences tend to converge with those of our immediate social network. This inclination can be attributed to the adaptive nature of conforming to social norms, which is inherently rewarding. The norms governing appropriate eating practices are established not only by observing the behaviour of peers but are also shaped by shared cultural expectations and environmental cues. In this context, social eating norms offers a novel avenue for interventions aimed at fostering healthier eating habits [52].

4. Family meals

As discussed above, the behavioral and physiological issues associated with social isolation underscore the importance of connecting with others and maintaining healthy social bonds [53], including mealtimes. The family is the most fundamental commensal unit and families that eat meals together tend to have healthier diets and their members are less likely to be overweight or obese [54]. Mounting evidence has shown that the family environment is essential for the proper development of eating behaviour in children and adolescents [55]. In the context of a child's dietary

habits, an increased consumption of fruits and vegetables can be attributed to parents' preferences for including these food items in family meals, leading to an upsurge in their intake. This inquiry becomes particularly significant since a child's dietary choices tend to mirror their overall nutritional intake [56]. According to the philosopher Byung-Chul Han, the diminishing inter-individual relationships typical of modern industrialized societies mostly unleashes a gratification crisis [57] , characterized by individuals compensating the lack of social relationships/ social connectedness by consuming high fat, high salt, and high sugar foods.

Moreover, the reported positive long-term effects of carbohydrates on mood [58] might be at least in part due to the customary way of eating them, e.g. pasta, couscous, etc. together with family and friends as opposed to, e.g. eating on-the-go foods while engaging in other activities.

Food conviviality can also promote healthy eating habits in children. Studies have shown that children who eat family meals together have a lower risk of obesity [59], better academic performance, and improved mental health outcomes [60]. Family meals can also be an opportunity for parents to model healthy eating habits and encourage their children to try new foods [61-63]. Children who eat dinner with their families on a regular basis have a lower risk of developing unhealthy weight control practices, such as skipping meals or fasting [64].

Furthermore, research has shown that conviviality with food can promote positive mental health outcomes. A study found that regular family meals were associated with fewer symptoms of depression and anxiety in adolescents [59]. Social eating behaviour exhibits an association with reduced likelihood of reporting symptoms indicative of anxiety and this observation aligns with existing literature, as several studies have previously documented an inverse correlation between partaking in family meals and the manifestation of anxiety symptoms. Establishing and adhering to family routines and rituals appears to foster stable family bonds, a cornerstone for the healthy psychological development of adolescents. Moreover, the act of partaking in meals with friends and family creates a conducive environment for the exchange of experiences, concerns, and other matters, thereby enhancing the quality of communication within these social circles. In line with

this concept, it is worth noting that reduced communication quality has demonstrated an association with social anxiety in the adolescent population [65].

5. New forms of conviviality in the digital era

The rise of digital technologies and their integration into our daily lives has led to the emergence of novel modes of social interaction. Among these, digital commensality stands out as a multifaceted concept, encompassing the sharing of meals and dining experiences in digital spaces. Digital technology has emerged indeed as a new platform for promoting different forms of commensality that go beyond physical proximity. Food is now shared in the digital space and the use of electronic devices to share meals remotely is increasing. It encompasses a wide array of online activities, including virtual cooking sessions, food blogging, live-streamed communal meals, and culinary exchange within social media platforms. These activities have given rise to a new dimension of shared dining experiences, transcending geographical boundaries and cultural divides. Social media platforms have become dynamic arenas for digital commensality. Here, individuals share their culinary creations, dining experiences, and culinary expertise with a global audience. This virtual dining table fosters a sense of community and cultural exchange, centred around food. Examples include the exaltation of the aesthetic values of food, also trivially known as “food porn”; the creation of virtual communities whose central theme is food. These digital forms of commensality enable people to connect, share meals, and engage in eating-related activities remotely [11].

Digital platforms such as videoconferencing, social media, and mobile applications enable people to connect, share meals, and engage in eating related activities facilitating dining experiences and eating-related interactions between people who are physically separated, as shown by the recent Covid-19 pandemic and related lockdowns [66]. This includes activities such as virtual meals, cooking classes, recipe sharing and online food communities [67].

One study aimed to determine how different forms of social presence, might influence sensory and emotional responses to meals eaten in three different commensality conditions: (1) physically together ("physical commensality"), (2) virtually together ("digital commensality"), and (3) alone ("eating alone"). Participants liked physical commensality the most, followed by digital commensality, while they liked eating alone the least. There was no significant difference in overall meal enjoyment between the physical and digital commensality conditions. This study highlights the great potential for improving eating environments by incorporating technological improvements in commensality, especially when physical commensality is not possible [68].

Like its traditional version, digital commensality also has the potential to foster social connectedness, allowing individuals to overcome geographic barriers and connect with others who share similar food preferences, cultural backgrounds, or health goals. This can have a positive impact on mental well-being and reduce social isolation, particularly among vulnerable populations. However, several approaches to using technology to connect those who are alone such as Mukbang, artificial dining assistants, and “skeating”, even if they appear potentially promising, more suitable research is needed before any strong conclusions can be drawn concerning the merits, in terms of health and well-being impact of these digital commensality solutions [69].

While digital commensality may lack the physical presence of shared meals, it still provides an opportunity for people to engage in collective dining experiences. Virtual cooking classes, recipe sharing, and online food communities can promote healthier eating habits by providing access to nutritious recipes, dietary advice, and social support to make healthier food choices. These platforms can introduce people to new and creative ways to prepare meals that prioritise whole foods, fruits, vegetables, lean proteins, and healthy fats. Digital commensality can influence eating behaviour through the presence of others during virtual meals leading to increased mindfulness and slower eating, potentially reducing the risk of overeating, provided that the overuse of telephones and TV do not distract from the virtual meal.

6. Potential mechanisms of action of conviviality on well-being.

6.1 Sociological hypotheses.

The mechanisms of action that link physical activity, conviviality, and happiness with a better prognosis are poorly understood. The state of happiness exerts a direct influence on various biological mechanisms, such as inflammatory responses, blood pressure levels, heart rate, and cortisol levels (26, 27). These effects potentially contribute to explaining the causal relationship between happiness and its impact on health. The very act of eating could trigger the endorphin system and promote bonding, and doing so socially could lead to the same kind of enhanced endorphin effects from behavioral synchrony that have been seen with physical exercise. Conviviality, characterized by joyful and harmonious social interactions, exerts a profound influence on individual and collective well-being. Therefore, it might be expected that people who eat together more often would have larger social networks, experience greater happiness and satisfaction with their lives, and demonstrate increased engagement in their communities [30]. Healthy diets, whose effects on health are established (vide infra) [70], appear to correlate with greater happiness; there are published data linking the intake of fruits and vegetables with greater happiness [25, 71]. Other poorly identified determinants of happiness (social recognition, high overall socioeconomic level, etc.) also have an indirect major influence on life expectancy and health: happiness, therefore, would or could simply be a "marker" of conditions with favourable effects on health itself. Finally, social relationships, networking, and conviviality are likely to reinforce each other in a virtuous cycle in which a sense of “belongingness” [72] acts as a nudge to support healthier lifestyles [73] and a buffer to support healthy lifestyles (Figure 1).

6.2 Biochemical hypotheses

Anatomically, social rewards are mainly processed in the brain by corticostriatal circuits similar to primary and secondary rewards such as food or money [74, 75]. It is also noteworthy that a low

frequency of social contacts or a high degree of loneliness have anatomical consequences e.g. smaller hippocampus and amygdala leading to cognitive impairment as reported by fMRI studies with a high number of participants [76]. Speculatively, shared mealtimes might alleviate such symptoms.

From a biochemical viewpoint, the mechanisms of action underlying the effects of conviviality (and loneliness) on food consumption are still to be elucidated and form part of the "exposome" [4, 77]. Theoretically, a homeostatic need for social contact is modulated by reward-related processes mostly based on dopamine's concentrations [78]. At least in mice, optogenetic activation of GABAergic neurons in the amygdala drives the release of dopamine in the ventral striatum and promotes more social behaviors such as increasing volitional decisions to seek interaction with novel littermates [79]. Moreover, a preliminary, yet sound investigation in humans demonstrated that a period of 10-h social isolation led to increases in social ''craving'' following presentation of socially conditioned cues. This behavior closely resembles food craving after fasting [80]. In keeping with the aforementioned, some self-reports of craving for food and social contact correlated with activation of dopaminergic midbrain regions, consistent with reports in mice [79, 81].

Further proof of the involvement of the dopaminergic system in social cooperation comes from rodent data on the activation of dopamine neurons during social interactions, which has been found to be increased in the ventral tegmental area [82] and released in the nucleus accumbens during interactions with littermates. In agreement with these data, human fMRI studies have consistently shown activation of the striatum in experiments where rewarding social interactions occur, e.g. cooperative games [83]. This activation is even stronger when interactions involve an existing social bond, e.g. families and friends during shared meals, likely because it represents an opportunity to further strengthen such connection [84]. Interactions within convivial settings trigger the release of neurochemicals, such as oxytocin and endorphins, associated with social bonding and

pleasure. These neurobiological responses are believed to enhance overall well-being and mitigate stress levels [85].

Additionally, positive memories of prior social interactions with relatives or close friends do impact decisions to pursue further connection with such individuals [86]. Cogent with this hypothesis, the traditional yet disappearing habit of eating together often brings about new opportunities for festive celebrations.

What we discussed above is being exploited in neuromarketing [87], which will greatly help deciphering the neural circuits involved in conviviality and food choices.

7. Concluding remarks

A healthy diet and adequate physical activity promote health. In addition to the mere components of the former, i.e. macro [88] and micronutrients [89], nutrition and physical activity can facilitate the creation of networks of connection between people, which, in turn, can promote, as a characterizing and unifying element of the group, lifestyles aimed at (or perceived as aimed at) the pursuit of well-being. Because the modern society is increasingly characterized by social isolation and loneliness [90] as highlighted by the US Surgeon General [91] and the WHO [92], appropriate research should be directed toward less parametric contributors to health, such as conviviality and social interactions. One paradigmatic, yet not exclusive example is the traditional Mediterranean diet, which is, unfortunately, increasingly less commonplace [93, 94].

Based on the available evidence, which is expected to accumulate to a greater extent with targeted investigation, it is reasonable to heighten public awareness and encourage sharing of meals to improve health and wellbeing. Interventions aimed at directly increasing/improving people's social relationships, networking, and conviviality can - directly and indirectly - improve both psychological well-being and general health.

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Author Contributions

FV and EB conceived the idea and wrote the paper.

Author Declarations

The authors declare no conflict of interest associated with this publication.

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Figure Legend

Fostering wellbeing: conviviality, commensality, and diets as cornerstones of healthy lifestyles.

Conviviality likely reduces stress via dopaminergic-related pathways [78], thereby increasing fruit and vegetable intake [50]. Eating together greatly lowers cardiovascular risk [49] and should be part of a healthy lifestyle.

Table 1. Main studies on conviviality and commensality

Authors, year, and country [reference number]	Population size and age group of study population	Type of study	Method of determining dietary intake or patterns	Outcomes reported	Key findings
Sobal and Nelson, 2003, USA [14]	97,000 rural, suburban and city consumers and included a diversity of ethnic and class groups.	Cross-sectional survey examined the prevalence and patterns of commensality in one US county in 1999	Mail questionnaire	Contemporary work-oriented society may lead people to eat alone during the day, but share evening meals with family	Peoples' social worlds appear to be focused on the nuclear family, and family members are also the people they usually eat with.
Larson et al., 2007, USA [63]	946 female students and 764 male students in high school classrooms	Survey	Surveys and food frequency questionnaires	Family meal frequency during adolescence predicted higher intakes of fruit, vegetables, dark-green and orange vegetables, and key nutrients and lower intakes of soft drinks during young adulthood.	Family meals during adolescence may have a lasting positive influence on dietary quality and meal patterns in young adulthood
Utter et al., 2008, New Zealand [54] [38]	3245 ethnically diverse students	Analytical study	Survey	Adolescents who regularly ate family meals were as likely to have less healthy snack foods available at home and regularly eat them as adolescents who do not have family meals.	Positive associations between family meals and improved adolescent nutrition

Phull et al., 2015, United Kingdom [24]		Review	Sociological and anthropological literature	Perceived benefits of eating together as well as the social constraints on pleasurable meals	Conviviality – the pleasure of eating together – was recognized as the cornerstone of food culture in the region
Dunbar, 2017, United Kingdom [30]	Panel sample of 2000 adults aged over 18 years	Analytical survey	Recall	People who eat socially are more likely to feel better about themselves and to have a wider social network capable of providing social and emotional support. Eating with someone in the evening makes one feel closer to them than eating with them at midday - evening meals at which laughter and reminiscences occur and alcohol is drunk are especially likely to enhance feelings of closeness.	Eating together may have health and survival benefits both directly and, through bigger and better social networks, indirectly.
Chae et al., 2018, Korea [51]	The final population for this study is 3365 men and 5158 women who are age 19 to 64 years old.	Analytical study	Health survey, nutrition survey, dietary Reference Intakes	Many Korean adults are experiencing low diet quality when they eat alone. The number of people who eat alone is increasing along with the changes	People who eat alone have nutrition intake below the recommended amount.

				of lifestyle.	
Utter et al., 2018, USA [44]	Sample of parents in the United States (n= 889, mean age 31 years) that responded to the fourth wave of the Project EAT study in 2015–16.	Longitudinal study of dietary intake, physical activity, weight control behaviors, weight status	Population-based survey data	Approximately 50% of parents report frequent family meals	Frequent family meals were associated with higher levels of family functioning, greater self-esteem, and lower levels of depressive symptoms and stress, and greater fruit and vegetable consumption
Ruddock et al., 2019, United Kingdom [45]		Systematic review and meta-analysis	Naturalistic observation methods and diary or ecological momentary assessment methods.	Eating with familiar others has a powerful effect of increasing food intakes, relative to eating alone.	Social facilitation of eating has evolved as a strategy that ensures the procurement of maximum personal food intake in the context of food sharing
Ferrer-Cascales et al., 2019, Spain [6]	527 high school students (54.5% females; 45.5% males) ranging in age from 12 to 17 years	A large-scale study on Mediterranean diet, well-being and bullying victimization carried out in schools in the Mediterranean city of Alicante (Spain)	Mediterranean Diet Quality Index for children and teenagers (KIDMED) - The Subjective Happiness Scale (SHS) - The KIDSCREEN-52 questionnaire measuring health-related quality of life	High adherence to the Mediterranean diet was associated with better health-related quality of life and more subjective happiness in adolescents	Protective effects of Mediterranean Diet adherence and its relationship with health status and subjective happiness and well-being.

de la Torre-Moral et al., 2021, Spain [95]	Sixteen adolescents, 12 participant families	Assessment with Mediterranean diet pyramid score and MEDAS methods	A qualitative descriptive approach was used in this study to describe the perspectives and practices of families regarding conviviality	Families with a less clear pattern of conviviality (i.e., spent less time on family meals, meals were not at the table, had digital distractions, did not enjoy meals through pleasant conversations) have a lower Mediterranean diet adherence.	Conviviality is an element of the Mediterranean diet as an intangible cultural heritage, which relates to the pleasure associated with eating together, or a particular attitude towards shared meals.
Medina, 2021, Spain [10]		Review	Health, sociological and anthropological literature	Commensality as an interdisciplinary perspective to the very definition of the Mediterranean diet.	Conviviality plays in favor of sustainability and nutrition.
Ruddock et al., 2021, United Kingdom [46]		Review		People eat more when eating with friends and family, relative to when eating alone.	Social facilitation of eating reflects a behavioral strategy that optimizes the evolutionary fitness of individuals who share a common food resource

Maroto-Rodriguez et al., 2023, Spain, United Kingdom, USA [22]	110,799 members of the UK Biobank cohort	Prospective	Higher adherence to the Mediterranean lifestyle was associated with lower all-cause and cancer mortality in British middle-aged and older adults in a dose-response manner		The "physical activity, rest, and social habits and conviviality" category was most strongly associated with lowered risks of all-cause mortality, and associated with a lower risk of cardiovascular disease mortality
Dallacker et al., 2023 Germany [50]	50 parent-child dyads participated in the trial	A Randomized Clinical Trial	Parent-child pairs had two meals in a laboratory setting. In the control condition they have as much time as usual. In the intervention condition they have 50% more time than usual.	This is known as the 'social facilitation of eating'.	Family meals are a formative learning environment that shapes children's food choices and preferences

Mini review

Graphical Abstract

Schematic representation of conviviality and its various health-promoting activities. As modern society is increasingly characterized by social isolation and loneliness, research should focus on less parametric factors that contribute to health, such as sociability and social interactions. Public health interventions aimed at improving people's social relationships, networking and sociability can improve both mental well-being and overall health.