**Supplementary Figure 1.** Flowchart for selection of study participants from the Moli-LOCK cohort Study

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**Supplementary Appendix 1.** ALT RISCOVID-19/Moli-LOCK questionnaire

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| --- | --- |
| **Questions** | **Answers** |
|  |  |
| **Personal information**  |  |
| Birth year | Birth year |
| Gender  | Female/Male/Other  |
| Ethnicity | Europe Asia North AmericaSouth/Central AmericaAfricaOceaniaOtherRefused/I do not know |
| Place of residence  | ZIP code or city name |
|  |  |
| **Socioeconomic factors**  |  |
| Educational level | NonePrimary school Lower secondary school Upper secondaryUniversity degreePostgraduate, Master’s degree, DoctorateRefused/I do not know |
| Type of employment contract | Full-time employed Part-time employedSelf-employedStudentRetiree UnemployedCitizen’s incomeUnemployment benefitsHousewifeDisability benefitsOtherRefused/I do not know |
| Main employment in the lifetime | Armed forces occupationsManagers ProfessionalsTechnicians and associate professionalsClerical support workersService and sales workersSkilled agricultural, forestry and fishery workersCraft and related trades workersPlant and machine operators and assemblersElementary occupationsRefused/I do not know |
| Are you a healthcare professional? | No, I’m notGP (general practitioner)Hospital-based general physicianClinical physicianNurseVolunteer EMTIntermediate care technicianPharmacistOtherRefused/I do not know |
| Household income in 2019 (EUR/y) | ≤10.000 >10.000≤25.000>25.000≤40.000>40.000≤60.000>60.000≤100.000 >100.000 Refused/I do not know |
| Housing tenure | Rent1 dwelling ownership > 1 dwelling ownership Refused/I do not know |
| Number of rooms in the house (bathrooms and additional rooms excluded) | 1 2 3 > 3 Refused/I do not know |
| Number of people living in the house (excluding respondent) | None 1 2 more than 2 Refused/I do not know |
| Marital status | Unmarried Married/in couple Divorced/separated Widower Refused/I do not know |
| Place of living  | City centre > 200.000 inhabitantsCity suburb > 200.000 inhabitantsCity centre < 200.000 inhabitants City outskirts < 200.000 inhabitantsCity < 50.000 inhabitantsSmall city/village < 10.000 inhabitantsRural area Refused/I do not know |
| The road traffic where you live is | High Moderate Low Refused/I do not know |
| Do you live with someone older than 65 y? | Yes/No/Refused/I do not know |
| Do you live with someone younger than 12 y? | Yes/No/Refused/I do not know |
| Do you live with a disabled person? | Yes/No/Refused/I do not know |
|  |  |
| **Health information**  |  |
| Have you been diagnosed with some of these diseases immediately before Phase 1 of lockdown? (multiple choice) | Lung diseaseHearth diseaseIschemic/haemorrhagic stroke Hypertension DiabetesKidney diseaseImmune system diseaseCancer Liver diseaseDepression AnxietyParkinson’s diseaseAlzheimer’s disease or dementiaMultiple sclerosisNoneRefused/I do not know |
| Are you disabled? | Yes/No/Refused/I do not know |
| Did you regularly take some of these drugs immediately before Phase 1 of lockdown? (multiple choice) | Aspirin Hearth disease drugsBlood pressure medicationsCholesterol medicationsDiabetes drugsAnti-cancer drugsCorticosteroidsThyroid medicationsAnti-inflammatory drugsAnxiolyticsAntidepressants ImmunomodulatorsNoneRefused/I do not know |
| Did you get flu vaccination last autumn (2019)? | Yes/No/Refused/I do not know |
| Did you get anti pneumococcal vaccine last autumn (2019)? | Yes/No/Refused/I do not know |
|  |  |
| **COVID-19** |  |
| From February 1 till now, did you get in touch with someone who contracted COVID-19 disease or was identified as positive by tests? | No, I did not Yes, in the workplace Yes, not in the workplace Refused/I do not know |
| Are you worried about getting infected by COVID-19? | Not at all A little bit Quite enough Extremely |
| Are you worried your relatives could get be infected by COVID-19? | Not at all A little bit Quite enough Extremely |
| Since February 1 till now, did you have any of these symptoms? (multiple choice) | Temperature higher than 37,5 °C for 3 consecutive daysCoughSore throat/fluHeadacheMuscle/bone/joint painLoss of taste (ageusia)/loss of smellRespiratory distressGastrointestinal symptoms (diarrhoea, nausea, vomit)Conjunctivitis PneumoniaNoneRefused/I do not know |
| Did you have a swab test for COVID-19? | No, I did notYes, it tested positiveYes, it tested negativeYes, it tested unclearRefused/I do not know |
| Did you repeat the swab test? | No, I did notYes, it tested positiveYes, it tested negativeYes, it tested unclearRefused/I do not know |
| Did you have a serology test for COVID-19?  | No, I did notYes, it resulted positiveYes, it resulted negativeYes, it resulted unclearRefused/I do not know |
| Were you diagnosed with COVID-19? | No, I was not Yes, I was treated at homeYes, I was treated at the hospitalYes, I was admitted into intensive care unitYes, I was intubatedRefused/I do not know |
| If you got infected by COVID-19, have you had any of the following persistent neurological symptoms even after been declared healed? (multiple choice) | Loss of tasteLoss of smellHearing lossTremors or movement disordersSeizuresNoneRefused/I do not know  |
| **Impact of lockdown on daily life** |  |
| What about your working activity during Phase 1 (March 9 to May 3, 2020)? | I went to work as usualI worked in smart working at homeI suspended my workI reduced my workI was out of work (dismissal)Refused/I do not know |
| What about your working activity after Phase 1? | I work in my workplace as usualI am doing smart working at homeI suspended my workI reduced my workI was out of work (dismissal)Refused/I do not know |
| Did your family have income support measures during Phase 1? (multiple choice) | Unemployment benefit600 € bonusBaby-sitting bonusParental leave bonusNoneOtherRefused/I do not know |
| How much did the monthly household income was reduced during Phase 1? | No reduction **<10%** **10-20%** **21-30%****31-50%** **51-70%** **>70%** **Refused/I do not know** |
| **Have you been diagnosed with any of the following diseases during Phase 1?** (multiple choice) | Lung diseaseHearth diseaseIschemic/ haemorrhagic stroke Hypertension DiabetesKidney diseaseImmune system diseaseCancerLiver diseaseDepression AnxietyParkinson’s diseaseAlzheimer’s disease or dementiaMultiple sclerosisNoneRefused/I do not know |
| **Did you give up medical checks or tests during Phase1?** | **No, I** did not**Yes, I gave up****Yes, my medical check has been cancelled/delayed****Refused/I do not know** |
| **Did you quit taking any of the following drugs during Phase 1? (multiple choice)** | **Aspirin** **Hearth disease drugs****Blood pressure medications****Cholesterol medications****Diabetes drugs****Anti-cancer drugs****Corticosteroids****Thyroid medications****Anti-inflammatory drugs**AnxiolyticsAntidepressants **Immunomodulators****None****Refused/I do not know** |
| **During Phase 1 did you start using** **(multiple choice)** | **Sleeping pills****Anxiolytics****Antidepressants****None****Refused/I do not know** |
| **When did you use to wear the face mask during Phase 1?** | **Never used****Only to go out for a walk/ play sports****Only to access the stores** **Each time I went out** **Every time, even at home****Refused/I do not know** |
| **When do you use to wear the face mask after Phase 1?** | **Never** **Only to go out for a walk/ play sports****Only to access the stores** **Each time I go out** **Every time, even at home****Refused/I do not know** |
| **Lifestyles**  |  |
| **Did you smoke before Phase 1?** | **I did not use to smoke/I have never smoked****I was a former smoker****I used to smoke less than 10 cigarettes per day****I used to smoke between 10 to 20 cigarettes per day****I used to smoke more than 20 cigarettes per day****Refused/I do not know** |
| **How did you change your smoking habit during Phase 1?**  | **I smoked as before****I smoked more than before****I smoked less than before****I started smoking****I quitted smoking****Refused/I do not know** |
| **How was your physical activity before Phase 1?** | **Never had or practiced less than 30 min per week****Between 30 min and 2 hours and 30 per week****More than 2 hours and 30 per week****Refused/I do not know** |
| **Your physical activity during Phase 1 was** | **Increased** **Decreased** UnchangedRefused/I do not know |
| How many times per week did you go out during Phase 1? | NeverOnce a week2-3 times a week4-5 times a week6 or more times a weekRefused/I do not know |
| Did you get public transport during Phase 1? | Not at allYes, 1 to 3 times per weekYes, 4 to 6 times per weekYes, 7 or more times per weekRefused/I do not know |
| **Sources of information**  |  |
| During Phase 1 you followed general news | Less than usualMore than usualAs usualRefused/I do not know  |
| Were you interested in specific news about COVID-19? | Not at allA little bitQuite enoughExtremelyRefused/I do not know |
| How did you find out news during Phase 1? (multiple choice) | TelevisionRadioNewspapersTelevision, radio or newspapers websitesGovernment websitesSocial networksFriendsGPRefused/I do not know |
| Who did you trust the most about COVID-19 emergency? | Scientists Doctors Journalists Political authoritiesNews on social networks Friends Refused/I do not know |
| You think that during Phase 1 news has been | Substantially reliableConfusingToo conflicting with each otherManipulated for economic or political interestsRefused/I do not know |
|  |  |
| **Diet-related factors** |  |
| *During Phase 1 lockdown:* |  |
| Your body weight  | Increased/Decreased/Unchanged/Refused/I do not know |
| Take-away food consumption  | Increased/Decreased/Unchanged/Refused/I do not know |
| Time spent on homefood preparation (e.g. bread, desserts, pasta, pizza) i | Increased/Decreased/Unchanged/Refused/I do not know |
| The number of meals per day (including snacks)  | Increased/Decreased/Unchanged/Refused/I do not know |
| Food supplements (e.g. vitamins)  | Increased/Decreased/Unchanged/Refused/I do not know |
| Water consumption  | Increased/Decreased/Unchanged/Refused/I do not know |
| Food budget  | Increased/Decreased/Unchanged/Refused/I do not know |
| Food shopping in short supply chain | Increased/Decreased/Unchanged/Refused/I do not know |
| Food shopping in long supply chain | Increased/Decreased/Unchanged/Refused/I do not know |
| Organic food consumption  | Increased/Decreased/Unchanged/Refused/I do not know |
| Local food consumption  | Increased/Decreased/Unchanged/Refused/I do not know |
| Pre-prepared meals consumption  | Increased/Decreased/Unchanged/Refused/I do not know |
| Long shelf life food consumption  | Increased/Decreased/Unchanged/Refused/I do not know |
|  |  |
| **Diet**  |  |
| Fresh fruit | Increased/Decreased/Unchanged/Refused/I do not know |
| Nuts and seeds |
| Fruit juices/nectars (with added sugars) |
| Fresh vegetables |
| Packaged vegetables |
| Ready-to-heat vegetables |
| Fresh/dried legumes |
| Canned legumes |
| Cereals (bread, pasta, rice, couscous) |
| Wholegrain cereals (bread, pasta, rice, couscous) |
| Breakfasts cereals and bars |
| Packaged bread  |
| Bread alternatives (crackers, taralli, breadsticks, frisella, rusks) |
| Biscuits |
| Potatoes |
| Ready-to-heat chips and potato croquettes |
| Pizza/focaccia |
| Fresh/frozen fish(no added ingredients) |
| Dried, smoked or salted fish (e.g. stock fish, smoked salmon) |
| Canned fish |
| Fish sticks nuggets (with added ingredients) |
| Red meat  |
| White meat (chicken, turkey, rabbit)  |
| Salted, dried, cured, or smoked meats  |
| Reconstituted meat products |
| Milk/plain yoghurt  |
| Fruit yoghurt |
| Soft cheese (e.g. mozzarella) |
| Hard cheese (e.g. pecorino) |
| Eggs |
| Olive oil |
| Butter, margarine, sour cream |
| Wine/beer/alcoholic beverages  |
| Soft drinks(e.g. cold tea, cola, chinotto, orange soda, soda water) |
| Coffee |
| Sweet packaged snacks |
| Savoury packaged snacks |
| Croissants/pastries/brioche  |
| Chocolate |
| Instant sauces (e.g. Pesto) |
| Plant-based cheese substitutes (e.g. Tofu) |
| Plant-based meat substitutes (e.g. veggie burger) |
|  |  |
| **Psychological aspects**  |  |
|  |  |
| **Patient’s Health Questionnaire (PHQ-9)** |  |
| *During the Phase 1 lockdown, how often have you been bothered by the following?* |  |
| 1. Little interest or pleasure in doing things?
 | never, several days, more than half the days, nearly every day |
| 1. Feeling down, depressed, or hopeless?
 |
| 1. Trouble falling or staying asleep, or sleeping too much?
 |
| 1. Feeling tired or having little energy?
 |
| 1. Poor appetite or overeating?
 |
| 1. Feeling bad about yourself - or that you are a failure or have let yourself or your family down?
 |
| 1. Trouble concentrating on things, such as reading the newspaper or watching television?
 |
| 1. Moving or speaking so slowly that other people could have noticed?

Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual? |
| 1. Thoughts that you would be better off dead, or of hurting yourself in some way?
 |
|  |  |
| **Generalized Anxiety Disorder 7-Item Scale (GAD-7)** |  |
| *During Phase 1, how often did each of the following bother you?* |  |
| 1. Feeling nervous, anxious, or on edge
 | not at all, several days, more than half the days, nearly every day |
| 1. Not being able to stop or control worrying
 |
| 1. Worrying too much about different things
 |
| 1. Trouble relaxing
 |
| 1. Being so restless that it's hard to sit still
 |
| 1. Becoming easily annoyed or irritable
 |
| 1. Feeling afraid as if something awful might happen
 |
|  |  |
| **Social support**  |  |
| *During PHASE 1, how much did you count on the support / help of these people?* |  |
| 1. Family members or other relatives
 | never, sometimes, often, all the time |
| 1. Friends / acquaintances / neighbours
 |
| 1. Other people free of charge (e.g. volunteers from associations)
 |
| 1. Other paid persons (e.g. caregiver, housekeeper)
 |
| 1. Professionals (e.g. psychologists, doctors)
 |
| 1. During PHASE 1, did you feel you were supporting / helping someone?
 | Not at all, a little, moderately, much, very much  |
|  |  |
| **Perceived Stress Scale 4 (PSS-4)** |  |
| *During Phase 1, how often*  |  |
| 1. Have you felt that you were unable to control the important things in your life?
 | never, almost never, sometimes, fairly often, very often |
| 1. Have you felt confident about your ability to handle your personal problems?
 |
| 1. Have you felt that things were going your way?
 |
| 1. Have you felt difficulties were piling up so high that you could not overcome them?
 |
|  |  |
| **Screening Questionnaire for Disaster Mental Health (SQD)** |  |
| *Have you experienced any of the symptoms listed below in relation to the COVID-19 pandemic IN THE LAST MONTH?* |  |
| 1. Have you noticed any changes in your appetite?
 | Yes, No |
| 1. Do you feel that you are easily tired and / or tired all the time?
 |
| 1. Do you have trouble falling asleep or sleeping through the night?
 |
| 1. Do you have nightmares about the event?
 |
| 1. Do you feel depressed?
 |
| 1. Do you feel irritable?
 |
| 1. Do you feel that you are hypersensitive to small noises or tremors?
 |
| 1. Do you avoid places, people, topics related to the event?
 |
| 1. Do you think about the event when you do not want to?
 |
| 1. Do you have trouble enjoying things you used to enjoy?
 |
| 1. Do you get upset when something reminds you of the event?
 |
| 1. Do you notice that you are making an effort to try not to think about the event, or are trying to forget it?
 |
|  |  |
| **‘Hut syndrome’** |  |
| 1. How much you feel worried by the fact that you are gradually returning to your habits and therefore being able to leave the house (not only for food supply)?
 | not at all, slightly, moderately, enough, a lot |
| 1. How much you feel worried by the fact that your family is gradually returning to its habits and therefore being able to leave the house (not just for food supply)?
 | not at all, slightly, moderately, enough, a lot |
| 1. What worries you most about returning to work
 | Public transport, meeting colleagues, meeting the public/customers, share common areas for lunch/coffee break, share toilets, I don't have to go back to work/work from home, I'm not worried, don't know/don't want to answer |
| 1. Compared to the period before the lockdown PHASE 1, now you feel:
 | More comfortable at home, more comfortable away from home, as usual |

**Supplementary Table 1.** Food items grouping according to the NOVA classification

|  |  |
| --- | --- |
| **Group 1.** Unprocessed or minimally processed foods | Fresh fruit, nuts, fresh vegetables, dried legumes, cereals (e.g. pasta, bread, rice), fresh fish, red meat, poultry, egg, potatoes, milk and plain yogurt, coffee. |
| **Groups 2 and 3.** Culinary ingredients and processed foods  | Olive oil, butter/lard/sour cream, wine/beer, salted/dried/ cured or smoked fish, canned fish, canned legumes, soft cheese, hard cheese, salted, cured, or smoked meats. |
| **Group 4.** Ultra-processed foods | Fruit drinks, packaged bread, bread alternatives, breakfast cereals and cereals bars, biscuits, ready-to-heat potatoes and potato croquettes, pizza, ready-to-heat vegetables, fish nuggets, reconstituted meat products, fruit yogurts, soft drinks, sweet packaged snacks, savoury packaged snacks, croissants, chocolate, instant sauces, plant-based cheese substitutes, plant-based meat substitutes.  |

**Supplementary Table 2.** Self-rated changes (%) in consumption of ultra-processed food during the COVID-19 outbreak confinement in Italy (March 9 – May 3, 2020) in the ALT RISCOVID-19 and Moli-LOCK study cohorts, Italy 2020

|  |  |  |
| --- | --- | --- |
|  | **ALT RISCOVID-19 (n=1,491; 49.8%)** | **Moli-LOCK Study (n=1,501; 50.2%)** |
| **Food items**  | Unchanged (%) | Increased (%) | Decreased (%) | Overall percentreduction (%) | Unchanged (%) | Increased (%) | Decreased (%) | Overall percent reduction (%) |
| Pizza  | 49.0 | 38.8 | 12.1 | 26.7 | 69.4 | 23.6 | 7.0 | 16.6 |
| Chocolate  | 59.8 | 27.8 | 12.5 | 15.3 | 87.9 | 9.5 | 2.6 | 6.9 |
| Biscuits  | 70.4 | 19.1 | 10.5 | 8.6 | 81.3 | 16.9 | 1.9 | 15.0 |
| Fruit yogurt  | 76.2 | 13.9 | 9.9 | 4.0 | 97.9 | 1.7 | 0.4 | 1.3 |
| Bread substitutes  | 66.8 | 18.4 | 14.8 | 3.6 | 93.8 | 5.2 | 1.0 | 4.2 |
| Sweet packaged snacks | 63.6 | 17.2 | 19.2 | -2.0 | 89.8 | 3.9 | 6.3 | -2.4 |
| Breakfast cereals, cereal bars | 80.9 | 8.2 | 10.9 | -2.7 | 99.3 | 0.3 | 0.3 | 0.0 |
| Savoury packaged snacks | 66.8 | 14.2 | 19.0 | -4.8 | 93.2 | 0.8 | 6.0 | -5.2 |
| Ready-to-heat potatoes and potato croquettes | 68.5 | 12.9 | 18.6 | -5.7 | 97.9 | 0.8 | 1.3 | -0.5 |
| Packaged bread  | 64.6 | 14.2 | 21.3 | -7.1 | 98.1 | 1.3 | 0.6 | 0.7 |
| Fruit drinks (e.g. nectars) | 77.0 | 7.8 | 15.2 | -7.4 | 98.8 | 0.60 | 0.60 | 0.0 |
| Reconstituted meat products | 72.2 | 8.5 | 19.3 | -10.8 | 95.5 | 1.5 | 3.0 | -1.5 |
| Fish nuggets and sticks  | 74.9 | 7.0 | 18.1 | -11.1 | 98.1 | 1.2 | 0.7 | 0.5 |
| Croissants  | 66.9 | 10.6 | 22.5 | -11.9 | 92.2 | 1.9 | 5.9 | -4.0 |
| Ready-to-heat vegetables  | 69.6 | 8.3 | 22.1 | -13.8 | 97.5 | 1.7 | 0.80 | 0.9 |
| Soft drinks  | 67.4 | 9.1 | 23.5 | -14.4 | 98.4 | 0.5 | 1.1 | -0.6 |
| Instant sauces  | 71.6 | 6.2 | 22.3 | -16.1 | 99.2 | 0.2 | 0.6 | -0.4 |
| Plant-based meat substitutes  | 77.5 | 2.4 | 20.2 | -17.8 | 99.7 | 0.1 | 0.2 | -0.1 |
| Plant-based cheese substitutes (e.g. tofu) | 77.7 | 1.6 | 20.7 | -19.1 | 99.7 | 0.1 | 0.2 | -0.1 |

All p values for difference between cohorts <0.0001 (adjusted for age and sex).

**Supplementary Table 3.** Association of demographic and socioeconomic factors with self-rated changes in ultra-processed food (UPF) consumption during the Italian lockdown following the COVID-19 pandemic (March 9 – May 3, 2020) in the ALT RISCOVID-19 and Moli-LOCK study cohorts by means of adjusted regression coefficients (β) with 95% confidence interval (95%CI), Italy 2020

|  |  |  |
| --- | --- | --- |
|  | **ALT RISCOVID-19 (n=1,491)** | **Moli-LOCK Study (n=1,501)** |
|  | % | UPF score (mean, SD) | β (95%CI)1 | β (95%CI)2 | % | UPF score (mean, SD) | β (95%CI)1 | β (95%CI)2 |
| Age groups (y) |  |  |  |  |  |  |  |  |
| 18-39 | 29.7 | -0.36 (5.21) | Ref. | Ref.  | - | - | - | - |
| 40-55 | 38.2 | -0.77 (5.83) | -0.39 (-1.07, 0.28) | -0.68 (-1.45, 0.09) | - | - | - | - |
| 56-65 | 20.2 | -1.21 (5.34) | -0.87 (-1.67, -0.08) | -1.26 (-2.18, -0.34) | - | - | - | - |
| 66-75 | 9.9 | -1.86 (5.25) | -1.73 (-2.75, -0.71) | -2.21 (-3.37, -1.05) | - | - | - | - |
| >75 | 2.0 | -2.00 (4.66) | -2.18 (-4.24, -0.11) | -2.76 (-4.89, -0.64) | - | - | - | - |
| Age groups (y) |  |  |  |  |  |  |  |  |
| 49-55 | - | - | - | - | 9.2 | 0.46 (2.24) | Ref. | Ref. |
| 56-65 | - | - | - | - | 28.6 | 0.49 (1.69) | 0.01 (-0.29, 0.31) | -0.06 (-0.36, 0.25) |
| 66-70 | - | - | - | - | 22.9 | 0.29 (1.58) | -0.16 (-0.47, 0.14) | -0.22 (-0.54, 0.11) |
| >70 | - | - | - | - | 39.4 | 0.15 (1.18) | -0.29 (-0.58, -0.01) | -0.34 (-0.69, -0.02) |
| Sex  |  |  |  |  |  |  |  |  |
| Women  | 63.2 | -1.29 (5.83) | Ref. | Ref. | 56.1 | 0.42 (1.68) | Ref. | Ref. |
| Men  | 36.8 | -0.15 (4.78) | 1.29 (0.71, 1.88) | 1.15 (0.56, 1.75) | 43.9 | 0.17 (1.36) | -0.22 (-0.38, -0.06) | -0.25 (-0.43,-0.07) |
| Geographical areas\* |  |  |  |  |  |  |  |  |
| Northern  | 34.7 | -0.09 (4.88) | Ref. | Ref.  | 0.00 | - | - | - |
| Central  | 13.3 | -0.56 (5.49) | -0.33 (-1.22, 0.56) | -0.33 (-1.23, 0.57) | 0.1 | - | - | - |
| Southern and Islands | 48.7 | -1.53 (5.89) | -1.48 (-2.09, -0.87) | -1.26 (-1.93, -0.60) | 99.9 | - | - | - |
| Living area |  |  |  |  |  |  |  |  |
| >200,000 inhabitants | 22.7 | -0.46 (4.96) | Ref. | Ref.  | - | - | - | - |
| <200,000 inhabitants | 23.7 | -0.52 (4.90) | -0.12 (-0.93, 0.69) | 0.28 (-0.56, 1.12) | - | - | - | - |
| <50,000 inhabitants  | 24.1 | -0.86 (5.42) | -0.51 (-1.31, 0.30) | 0.07 (-0.80, 0.93) | - | - | - | - |
| Villages/rural areas | 29.4 | -1.47 (6.30) | -1.15 (-1.92, -0.37) | -0.36 (-1.21, 0.50) | - | - | - | - |
| Living area | - | - | - | - |  |  |  |  |
| Urban  | - | - | - | - | 84.5 | 0.34 (1.60) | Ref. | Ref.  |
| Villages/rural areas  | - | - | - | - | 15.5 | 0.16 (0.10) | -0.20 (-0.42, 0.01) | -0.22 (-0.44, 0.004) |
| Educational level  |  |  |  |  |  |  |  |  |
| Up to lower secondary | 4.0 | -2.17 (6.48) | Ref. | Ref.  | 32.8 | 0.21 (1.33) | Ref. | Ref. |
| Upper secondary  | 26.1 | -1.04 (5.84) | 1.06 (-0.43, 2.56) | 0.66 (-0.86, 2.19) | 46.4 | 0.41 (1.52) | 0.18 (-0.002, 0.36) | 0.14 (-0.08, 0.35) |
| Postgraduate  | 69.9 | -0.73 (5.29) | 1.39 (-0.04, 2.83) | 0.57 (-0.99, 2.13) | 20.8 | 0.25 (1.91) | 0.01 (-0.22, 0.23) | -0.13 (-0.44, 0.18) |
| Household income (EUR/year) |  |  |  |  |  |  |  |  |
| ≤10,000  | 4.8 | -1.35 (6.01) | Ref. | Ref.  | 5.3 | 0.43 (1.02) | Ref. | Ref. |
| >10,000≤25,000 | 22.3 | -1.52 (6.30) | 0.05 (-1.35, 1.45) | -0.32 (-1.73, 1.09) | 32.5 | 0.25 (1.63) | -0.17 (-0.54, 0.20) | -0.27 (-0.65, 0.11) |
| >25,000≤40,000 | 22.0 | -0.62 (5.61) | 1.10 (-0.31, 2.50) | 0.50 (-0.93, 1.93) | 36.6 | 0.19 (1.61) | -0.22 (-0.59, 0.14) | -0.44 (-0.84, -0.03) |
| >40,000≤60,000 | 14.1 | -0.48 (4.96) | 1.28 (-0.21, 2.77) | 0.44 (-1.09, 1.98) | 11.2 | 0.39 (1.63) | -0.01 (-0.42, 0.41) | -0.22 (-0.68, 0.25) |
| >60,000 | 19.7 | -0.29 (4.57) | 1.51 (0.05, 2.96) | 0.53 (-1.01, 2.06) | 2.9 | 0.68 (1.16) | 0.24 (-0.33, 0.81) | 0.08 (-0.53, 0.69) |
| Unknown  | 17.1 | -1.20 (5.39) | 0.48 (-0.95, 1.92) | -0.03 (-1.49, 1.42) | 11.5 | 0.62 (1.33) | 0.14 (-0.27, 0.55) | -0.004 (-0.44, 0.43) |
| Marital status |  |  |  |  |  |  |  |  |
| Married/in couple | 63.4 | -0.77 (5.35) | Ref. | Ref.  | 82.8 | 0.34 (1.51) | Ref. | Ref. |
| Unmarried | 27.3 | -0.87 (5.63) | -0.54 (-1.25, 0.18) | -0.06 (-0.85, 0.73) | 3.9 | -0.17 (2.42) | -0.59 (-1.00, -0.18) | -0.62 (-1.08, -0.16) |
| Divorced  | 7.2 | -1.14 (6.13) | -0.11 (-1.20, 0.99) | 0.10 (-1.04, 1.24) | 3.5 | 0.40 (1.86) | 0.01 (-0.42, 0.44) | -0.05 (-0.50, 0.40) |
| Widower | 2.1 | -2.84 (5.45) | -1.24 (-3.22, 0.75) | -0.79 (-2.80, 1.21) | 9.8 | 0.23 (1.31) | -0.07 (-0.35, 0.21) | -0.09 (-0.45, 0.28) |
| Number of cohabitants  |  |  |  |  |  |  |  |  |
| None | 10.8 | -1.70 (6.23) | Ref. | Ref.  | 10.4 | 0.14 (1.44) | Ref. | Ref. |
| 1  | 28.7 | -0.73 (5.06) | 1.00 (0.01, 1.99) | 0.95 (-0.14, 2.03) | 48.3 | 0.23 (1.45) | 0.12 (-0.15, 0.39) | -0.03 (-0.39, 0.35) |
| 2 | 24.7 | -0.48 (5.25) | 1.01 (-0.01, 2.02) | 1.14 (0.02, 2.26) | 22.4 | 0.53 (1.56) | 0.37 (0.07, 0.67) | 0.21 (-0.19, 0.62) |
| >2 | 35.8 | -0.99 (5.72) | 0.45 (-0.52, 1.42) | 0.58 (-0.54, 1.70) | 18.9 | 0.33 (1.81) | 0.10 (-0.22, 0.43) | -0.10 (-0.53, 0.33) |
| Occupational class  |  |  |  |  |  |  |  |  |
| Professional/managerial  | 59.8 | -0.68 (5.17) | Ref. | Ref.  | 27.3 | 0.34 (1.54) | Ref. | Ref. |
| Skilled non-manual  | 22.3 | -0.74 (5.71) | -0.01 (-0.68, 0.70) | 0.08 (-0.68, 0.83) | 39.4 | 0.37 (1.64) | 0.02 (-0.18, 0.21) | -0.05 (-0.27, 0.17) |
| Skilled manual | 3.1 | -1.22 (4.53) | -0.92 (-2.54, 0.70) | -0.29 (-2.04, 1.45) | 6.8 | 0.19 (1.34) | -0.07 (-0.41, 0.27) | -0.10 (-0.49, 0.29) |
| Partly skilled/unskilled | 1.8 | -0.74 (7.52) | -0.53 (-2.62, 1.56) | 0.07 (-2.06, 2.19) | 10.5 | 0.00 (1.55) | -0.32 (-0.60, -0.03) | -0.37 (-0.70, -0.04) |
| Unemployed/unclassified  | 13.0 | -1.90 (6.30) | -1.35 (-2.21, -0.49) | -0.92 (-1.84, 0.01) | 16.0 | 0.37 (1.40) | -0.09 (-0.35, 0.16) | -0.20 (-0.51, 0.11) |

\*Numbers do not add up to 100% due to missing data.

1Multivariable-adjusted linear regression including age and sex.

2 Multivariable-adjusted linear regression including age, sex, geographical area (not in the Moli-LOCK cohort), living area, educational level, household income, marital status, number of cohabitants, occupational class.

**Supplementary Table 4.** Association of lockdown-induced factors with self-reported changes in ultra-processed food (UPF) consumption during the Italian lockdown following the COVID-19 pandemic (March 9 – May 3, 2020) in the ALT RISCOVID-19 and Moli-LOCK study cohorts by means of adjusted regression coefficients (β) with 95% confidence interval (95%CI), Italy 2020

|  |  |  |
| --- | --- | --- |
|  | **ALT RISCOVID-19 (n=1,491)** | **Moli-LOCK Study (n=1,501)** |
|  | % | UPF score (mean, SD) | β(95%CI) 1 | % | UPF score (mean, SD) | β(95%CI) 2 |
| Work type during lockdown\* |  |  |  |  |  |  |
| Usual working | 24.7 | -0.61 (5.12) | Ref.  | 6.3 | 0.22 (1.63) | Ref.  |
| Home working | 34.4 | -0.64 (5.39) | 0.04 (-0.69, 0.78) | 12.5 | 0.53 (2.22) | 0.26 (-0.13, 0.64) |
| Work interruption  | 12.6 | -1.63 (6.36) | -0.68 (-1.67, 0.32) | 5.9 | 0.40 (1.68) | 0.18 (-0.27, 0.62) |
| Work reduction  | 8.2 | -0.49 (5.92) | 0.08 (-1.04, 1.19) | 1.1 | 1.37 (1.63) | 1.31 (0.49, 2.13) |
| Job loss | 1.7 | 0.12 (5.93) | 1.02 (-1.22, 3.26) | 0.3 | -0.25 (1.89) | -0.15 (-1.70, 1.40) |
| Retired/housewife | 13.8 | -1.77 (5.16) | -0.12 (-1.29, 1.04) | 71.2 | 0.25 (1.39) | 0.21 (-0.16, 0.57) |
| Income support  |  |  |  |  |  |  |
| No  | 65.7 | -0.89 (0.17) | Ref. | 85.9 | 0.28 (1.55) | Ref. |
| Yes  | 34.3 | -0.82 (0.24) | -0.54 (-1.14, 0.06) | 14.1 | 0.49 (1.54) | 0.08 (-0.16, 0.32) |
| Income reduction\* |  |  |  |  |  |  |
| No | 51.4 | -0.58 (5.00) | Ref.  | 83.9 | 0.29 (1.55) | Ref. |
| Yes  | 38.5 | -1.02 (5.98) | 0.02 (-0.59, 0.62) | 13.1 | 0.47 (1.54) | 0.06 (-0.19, 0.32) |
| Sport activity during lockdown\* |  |  |  |  |  |  |
| Unchanged  | 28.5 | -0.45 (4.89) | Ref. | 34.5 | 0.18 (1.12) | Ref. |
| Increased  | 16.8 | -1.38 (5.11) | -0.98 (-1.82, -0.13) | 1.7 | -0.48 (1.94) | -0.59 (-1.21, 0.03) |
| Decreased  | 53.5 | -0.92 (5.86) | -0.41 (-1.05, 0.23) | 45.7 | 0.36 (1.66) | 0.14 (-0.04, 0.32) |
| Physical activity during lockdown \* |  |  |  |  |  |  |
| Unchanged  | 85.6 | -0.92 (5.41) | Ref. | 94.6 | 0.29 (1.56) | Ref. |
| Increased  | 7.8 | -0.16 (5.70) | 0.91 (-0.12, 1.94) | 2.8 | 0.74 (1.25) | 0.28 (-0.20, 0.76) |
| Decreased  | 6.6 | -0.99 (6.25) | 0.08 (-1.04, 1.20) | 2.6 | 0.51 (1.55) | 0.23 (-0.26, 0.72) |
| Diagnosis of chronic diseases during lockdown\* |  |  |  |  |  |  |
| No | 91.8 | -0.89 (5.47) | Ref. | 98.5 | 0.32 (1.55) | Ref. |
| Yes | 7.2 | -0.25 (5.63) | 1.02 (-0.04, 2.09) | 1.3 | -0.30 (1.42) | -0.70 (-1.38, -0.02) |
| Drug use during lockdown\* |  |  |  |  |  |  |
| No | 93.5 | -0.86 (5.44) | Ref. | 98.7 | 0.31 (1.56) | Ref. |
| Yes | 5.6 | -1.08 (6.51) | -0.01 (-1.21, 1.19) | 1.3 | 0.31 (0.75) | 0.05 (-0.64, 0.75) |

\*Numbers do not add up to 100% due to missing data.

1Multivariable-adjusted linear regression including age, sex, geographical area, number of cohabitants, occupational class.

2Multivariable-adjusted linear regression including age, sex, living area, household income, marital status, occupational class.

**Supplementary Table 5.** Association of diet-related behaviours with self-rated changes in ultra-processed food (UPF) consumption during the Italian lockdown following the COVID-19 pandemic (March 9 – May 3, 2020) in the ALT RISCOVID-19 and Moli-LOCK study cohorts by means of adjusted regression coefficients (β) with 95% confidence interval (95%CI), Italy 2020

|  |  |  |
| --- | --- | --- |
|  | **ALT RISCOVID-19 (n=1,491)** | **Moli-LOCK Study (n=1,501)** |
|  | % | UPF score (mean, SD) | β(95%CI) 1 | % | UPF score (mean, SD) | β(95%CI)2 |
| Body weight  |  |  |  |  |  |  |
| Unchanged  | 47.5 | -1.46 (4.93) | Ref. | 52.6 | 0.12 (1.38) | Ref. |
| Increased  | 39.3 | 0.53 (5.56) | 1.93 (1.34, 2.51) | 36.0 | 0.78 (1.58) | 0.60 (0.43, 0.77) |
| Decreased  | 11.9 | -2.98 (6.13) | -1.61 (-2.49, -0.74) | 10.9 | -0.27 (1.84) | -0.41 (-0.67, -0.16) |
| Take away food |  |  |  |  |  |  |
| Unchanged | 58.6 | -0.79 (5.12) | Ref. | 93.1 | 0.28 (1.54) | Ref. |
| Increased | 19.4 | 0.40 (5.79) | 0.63 (-0.09, 1.36) | 3.9 | 0.81 (1.48) | 0.45 (0.05, 0.86) |
| Reduced | 21.0 | -2.03 (5.71) | -1.43 (-2.13, -0.72) | 2.3 | 0.77 (1.88) | 0.37 (-0.15, 0.89) |
| Time spent on homefood preparation |  |  |  |  |  |  |
| Unchanged | 42.4 | -1.01 (5.15) | Ref. | 55.8 | -0.11 (1.48) | Ref. |
| Increased | 54.5 | -0.70 (5.67) | 0.29 (-0.29, 0.86) | 42.8 | 0.88 (1.45) | 0.96 (0.80, 1.11) |
| Reduced | 2.0 | -1.67 (6.73) | -0.64 (-2.63, 1.34) | 1.2 | -0.89 (1.78) | -0.80 (-1.49,-0.11) |
| Number of daily meals |  |  |  |  |  |  |
| Unchanged | 74.0 | -1.45 (5.10) | Ref. | 85.4 | 0.18 (1.42) | Ref. |
| Increased | 22.9 | 1.22 (6.08) | 2.83 (2.18, 3.49) | 12.3 | 1.39 (1.77) | 1.12 (0.89, 1.35) |
| Reduced | 2.9 | -2.39 (6.15) | -1.02 (-2.64, 0.60) | 1.9 | - 1.00 (2.37) | -1.25 (-1.81,-0.69) |
| Food supplements use |  |  |  |  |  |  |
| Unchanged | 83.7 | -0.80 (5.32) | Ref. | 97.4 | 0.29 (1.54) | Ref. |
| Increased | 11.9 | -1.57 (5.74) | -0.35 (-1.20, 0.50) | 1.6 | 1.17 (1.83) | 0.73 (0.10, 1.36) |
| Reduced | 2.1 | -1.35 (8.29) | -0.53 (-2.46, 1.40) | 0.4 | 0.83 (1.72) | 0.13 (-1.11, 1.37) |
| Water intake |  |  |  |  |  |  |
| Unchanged | 68.2 | -0.86 (4.97) | Ref. | 90.9 | 0.28 (1.52) | Ref. |
| Increased | 27.2 | -0.83 (6.51) | 0.003 (-0.63, 0.64) | 7.3 | 0.45 (1.84) | 0.11 (-0.19, 0.42) |
| Reduced | 4.2 | -1.21 (6.36) | -0.46 (-1.86, 0.94) | 1.3 | 1.15 (1.50) | 0.66 (-0.03, 1.34) |
| Food budget |  |  |  |  |  |  |
| Unchanged | 45.7 | -1.27 (4.96) | Ref. | 65.6 | 0.16 (1.51) | Ref. |
| Increased | 43.0 | -0.19 (5.72) | 0.82 (0.22, 1.43) | 17.9 | 0.70 (1.63) | 0.48 (0.27, 0.69) |
| Reduced | 10.3 | -1.84 (6.43) | -0.33 (-1.28, 0.62) | 15.5 | 0.43 (1.53) | 0.24 (0.02, 0.46) |
| Short food supply chain |  |  |  |  |  |  |
| Unchanged | 44.1 | -0.84 (5.00) | Ref. | 68.0 | 0.19 (1.56) | Ref. |
| Increased | 44.1 | -0.92 (5.77) | 0.08 (-0.52, 0.67) | 22.3 | 0.61 (1.46) | 0.41 (0.22, 0.60) |
| Reduced | 10.9 | -0.57 (6.12) | 0.16 (-0.77, 1.09) | 8.3 | 0.52 (1.48) | 0.32 (0.03, 0.61) |
| Long food supply chain |  |  |  |  |  |  |
| Unchanged | 42.7 | -0.92 (4.69) | Ref. | 66.7 | 0.19 (1.50) | Ref. |
| Increased | 27.4 | -0.18 (6.15) | 0.59 (-0.08, 1.27) | 8.1 | 0.57 (1.69) | 0.40 (0.11, 0.69) |
| Reduced | 29.2 | -1.42 (5.82) | -0.18 (-0.85, 0.49) | 23.7 | 0.59 (1.54) | 0.40 (0.21, 0.59) |
| Organic food |  |  |  |  |  |  |
| Unchanged | 85.2 | -0.64 (5.22) | Ref. | 97.5 | 0.29 (1.55) | Ref. |
| Increased | 9.3 | - 2.01 (7.08) | -1.35 (-2.30, -0.41) | 1.1 | 0.81 (1.22) | 0.45 (-0.32, 1.21) |
| Reduced | 2.8 | -2.71 (6.05) | -2.16 (-3.84, -0.48) | 0.4 | 1.67 (0.82) | 1.29 (0.06, 2.54) |
| Local food |  |  |  |  |  |  |
| Unchanged | 71.2 | -0.57 (5.21) | Ref. | 86.5 | 0.22 (1.48) | Ref. |
| Increased | 22.1 | -1.69 (6.04) | -0.98 (-1.65, -0.31) | 7.4 | 0.70 (1.22) | 0.51 (0.21, 0.81) |
| Reduced | 4.8 | -1.12 (6.23) | -0.36 (-1.65, 0.93) | 5.2 | 1.04 (2.52) | 0.68 (0.33, 1.04) |
| Pre-prepared meals |  |  |  |  |  |  |
| Unchanged | 64.5 | 0.03 (4.45) | Ref. | 95.5 | 0.28 (1.53) | Ref. |
| Increased | 7.4 | 2.35 (5.50) | 2.05 (1.06, 3.04) | 2.9 | 1.37 (1.91) | 0.98 (0.51, 1.45) |
| Reduced | 22.5 | - 4.36 (6.44) | -4.34 (-4.97, -3.71) | 0.7 | 0.09 (1.37) | -0.36 (-1.27, 0.55) |
| Long shelf life food |  |  |  |  |  |  |
| Unchanged | 67.1 | - 0.49 (4.61) | Ref. | 91.0 | 0.26 (1.41) | Ref. |
| Increased | 20.3 | 0.96 (5.80) | 1.41 (0.76, 2.06) | 7.3 | 0.98 (2.54) | 0.59 (0.29, 0.90) |
| Reduced | 11.5 | -6.09 (6.30) | -5.54 (-6.37, -4.72) | 0.9 | -0.07 (2.61) | -0.64 (-1.45, 0.17) |

\*Numbers do not add up to 100% due to missing data.

1Multivariable-adjusted linear regression including age, sex, geographical area, number of cohabitants, occupational class.

2Multivariable-adjusted linear regression including age, sex, living area, household income, marital status, occupational class.

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