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D2.7 – UPDATED VERSION OF BLUEPRINT OF THE AI PREVENTIVE SYSTEM INCLUDING INPUT AND OUTPUT VARIABLES, END-USER INTERFACE DESIGN AND USABILITY RELATED REQUIREMENTS

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VERSION AND AMENDMENTS HISTORY

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0.1	15/12/2023	SCS	Initial draft.
0.2	19/12/2023	André Henriksen – UiT; Thomas Thomas Schopf – NSE	Draft reviewed.
1	21/12/2023	SCS	Final version for submission.





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LIST OF ABBREVIATIONS

Abbreviation	Significance
AI	Artificial Intelligence
APP	Application
AQI	Air Quality Index
BBM	Bayesian Belief Model
CVD	Cardiovascular diseases
COPD	Chronic Obstructive Pulmonary Disease
D	Deliverable
GA	Grant Agreement
M	Month
NCD	Non-Communicable Disease
NO	Norway
ES	Spain
RO	Romania
UV	Ultraviolet
WHO	World Health Organization
WP	Work Package



1 INTRODUCTION

1.1 WARIFA APP

The WARIFA Artificial Intelligence (AI) based App collects users' general lifestyle data to provide personalized recommendations in relation to modifiable risk factors of the non-communicable diseases (NCDs) considered by the WARIFA project i.e., cardiovascular disease, melanoma, diabetes, and chronic obstructive pulmonary disease.

The following information on NCD risk factors is collected by the App:

- Unhealthy diet;
- Physical inactivity;
- Alcohol and tobacco use.

The App also gathers specific disease information for diabetes and melanoma. It provides risk predictions for cardiovascular disease and melanoma while offering personalized tools for managing type 1 diabetes by monitoring variables such as glucose and HbA1C levels.

1.2 ARCHITECTURE BACKGROUND

The WARIFA App prototype uses AI and the analysis of data generated by wearables (e.g., wellness trackers or medical devices), in-App questionnaires, and ubiquitous data to provide a personalized set of recommendations on lifestyle factors according to the risk score of each individual, as output variables.

To gather person-specific information, each Data Source will be queried upon user request for relevant information that will be pre-analysed in the Data Processing module. The information collected from the Data Sources carries a small set of metadata that allows the identification of the user, the source, and the type of information it contains. The information is transmitted to the Data Processing module which filters the data, translates it into a communication standard and sends it to the Prepared Data Storage according to the WARIFA data structure.

The AI algorithms in the WARIFA architecture aim to understand the importance of each input variable in predicting the risk score. They determine the role of these variables based on their significance in the WARIFA system.

1.3 DELIVERABLE SCOPE

The current deliverable D2.7 is the main output of WP2 Task 2.4 "Define the list of input and output variables for the AI tool for risk calculating and prevention recommendation". This is realized through consensus of the project experts, based on the variables for risk calculators validated in literature, the configuration of risk factors identified in the pilot communities, and evidence-based prevention recommendations. The deliverable associated with this task is D2.7 'Blueprint for the design of the AI preventive system including input and output variables'.

D2.7 builds on the information provided in other WP2 deliverables. These include:

- D2.1 regarding risk calculators validated in the scientific literature and medical practice;





- D2.3 regarding the mapping and configuration of risk factors for the studied NCDs that comprise cardiovascular diseases, diabetes, skin cancer, and chronic obstructive pulmonary disease (COPD);
- D2.4, which entailed preliminary suggestions for input and output variables; and
- D2.5 which reported on end-user interface design and usability requirements.

In addition, D2.2 outcomes were used for establishing the baseline of the blueprint's variables. D2.2 investigated the attitudes and expectations of stakeholder groups like health care provider organizations, IT companies, and patients' organizations regarding a mobile/smartphone-based preventive AI solution.

Beyond WP2, the present document integrates the expert opinion and progressive technical work achieved by the consortium members with expertise in clinical and preventive medicine, social and behavioral sciences, software development and computer sciences, as well as patient advocacy representatives' perspective. Research and technical developments from WP3, WP4, WP5 and WP6, and outcomes on the interactions with end-users from WP7 have been incorporated into this document.

The objective of D2.7 is to lay down the updated sets of input and output variables for the development of the WARIFA AI tool. The variable sets stem from the current scientific knowledge, evidence-based medical practice, and the research carried out in the WARIFA project until now. These sets of variables were defined considering their relevance for risk assessment and outcome prediction and the feasibility of their collection from the study population and from corresponding databases for machine learning training and testing.

Moreover, the feedback emerged from stakeholders' activities promoted in WP2 (i.e., survey and group discussions) and past focus groups conducted with end-users in WP7 have been key to define the core input and output topics, as well as to define the interface and visual identity of the App.

Since this process is still ongoing and the App prototype is under finalization, the input and output variables discussed in the current deliverable could be subject to variations, considering the latest technical developments of the App and upon the testing phase with end-users.

Consequently, the final sets of input and output variable lists and the end-user interface and usability requirements for the finalized WARIFA App prototype will be reported in an updated version of D2.7, which is envisaged towards the end of the project when all the technical work is concluded.



2 INPUT VARIABLES FOR THE AI TOOL

The WARIFA App has been developed to collect related input data from the users for the AI tool to produce personalized recommendations.

These input variables relate to general lifestyle data, emphasizing some of the most relevant modifiable risk factors of NCDs: unhealthy diet, physical inactivity, and alcohol and tobacco use. These risks have been defined also thanks to the work executed in WP2 and its previous deliverables i.e., D2.2 and the progressive feedback retrieved from end-users in WP7.

The sets of input variables reported in D2.7 are the result of extensive work performed by the WARIFA multi-disciplinary consortium in the past two years of the project. Input variables comprise both self-reported data retrieved from the users' answers to specific sets of questions and up-to-date information collected through sensors and other external tools.

Thanks to this set of input data, the App will be able to provide personalized recommendations to change lifestyle risk factors for the prevention of NCDs, especially the four NCDs of interest for the WARIFA project (melanoma, diabetes, CVD and COPD).

The App will also include risk scores for melanoma and CVD, while supporting users with type 1 diabetes in the management of their disease through glucose level predictions.

Input variables are:

- **Basic user data**
- **Questionnaires answered by users**
 - Common questionnaire
 - Disease-specific questionnaire
- **Sensor data**
- **Contextual data from databases/websites**

The **common questionnaire** is provided to all users independent of their disease status, meaning all users will be asked to fill this out when using the App. This questionnaire has been divided into the following smaller questionnaires to avoid overwhelming the user: *healthy habits*, *sun habits*, and *healthy eating*.

The **disease-specific questionnaire** is provided to specific patients or population cohorts based on their preferences selected on the App, which the other users will not receive. Available disease-specific questionnaires are for melanoma and diabetes. Questions related to COPD are included in the common questionnaire, and hence this condition does not have a separate questionnaire.

Inputs sources are being incorporated into the App and will be soon tested in new WP7 focus groups.










2.1 BASIC USER DATA

Basic user data refer to **age (year of birth), sex, height, weight, and localization** (entered either manually by the user or through enabled automatic geolocation). These data will be obtained at first contact with the App.

2.2 COMMON QUESTIONNAIRE

A common questionnaire that can be answered in ca. 5-10 minutes by the user has been developed¹. The questionnaire (Annex 1) collects information on NCD risk factors. It includes questions about health status and life habits, categorized as follows:

Category		Details/ Data Points
	Health Status and Disease Situation	<ul style="list-style-type: none">• Specific health conditions
	Socio-economic Background	<ul style="list-style-type: none">• Family status, education, job, income
	Diet	<ul style="list-style-type: none">• Nutritional habits
	Alcohol	<ul style="list-style-type: none">• Consumption habits and frequency
	Physical Activity	<ul style="list-style-type: none">• Types of activities, frequency and duration
	Tobacco and e-cigarettes	<ul style="list-style-type: none">• Smoking habits
	Sun Habits	<ul style="list-style-type: none">• Sun exposure habits

All these questions will not be asked at once, depending on the user's marked preferences (see Section 2.3) and in order not to overwhelm the user.

¹ Gram et al. A smart-phone-based information communication technology solution for primary modifiable risk factors for noncommunicable diseases: pilot and feasibility study in Norway. JMIR Form Res 2022;6(2):e33636.



1. How often do you drink alcohol?
Choose an option

2. How many units of alcohol do you usually take when you drink? (Units of alcohol)
Choose an option units of alcohol

3. How often do you drink 6 units of alcohol or more on one occasion?
Choose an option

4. During the last 7 days, on how many days did you do vigorous physical activities (makes you breathe much more than usual) like heavy lifting, digging, aerobics, running or fast bicycling of at least 10 minutes duration?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ 6 ☐ 7

5. During the last 7 days, on how many days did you do moderate physical activities (makes you breathe a little more than usual) like carrying light loads, bicycling at a regular path, or double tennis? (Do not include walking)
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ 6 ☐ 7

5. During the last 7 days, on how many days did you do moderate physical activities (makes you breathe a little more than usual) like carrying light loads, bicycling at a regular path, or double tennis? (Do not include walking)
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ 6 ☐ 7

6. During the last 7 days, on how many days did you walk at least 10 minutes at a time?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ 6 ☐ 7

7. How much time (hours) did you spend sitting on a normal weekday during the last 7 days? (Do not include the time you sleep).
hour(s)

8. How often do you smoke?
Choose an option

9. How often do you vaporize (vape) e-cigarettes?
Choose an option

Figure 1. Example of how questions of the common questionnaires will be shown on the App

2.3 GOALS SETTING

In the first contacts with the App, **the users will be able to set goals and select their preferences for personalized recommendations**. The user can click on "Goals" and select which health aspects to focus on e.g., diabetes, healthy eating, healthy habits, and sun habits (see Figure 2).

Apart from the common questionnaire, which is shown to all users, the App will show up the disease-specific questionnaires according to the selected goals, i.e., if the user wishes to focus on diabetes, a diabetes questionnaire will be available in the questionnaire page.



Here you can select the areas you are interested in for prevention and/or management.

Questionnaire filling frequency

Diabetes questionnaire

☐ ON ☐ OFF

Healthy eating questionnaire

☐ ON ☐ OFF

Healthy habits questionnaire

☐ ON ☐ OFF

Sun habits questionnaire

☐ ON ☐ OFF

Figure 2. Setting goals and preferences on the App

2.4 DISEASE-SPECIFIC QUESTIONNAIRES

For diabetes and melanoma information collected through the common questionnaire will be complemented by other *ad hoc* disease-specific questionnaires. The specific questionnaire will appear in the App if the users select the relevant disease within their preferred goals (see Section 2.3).

The diabetes questionnaire, attached in Annex 2, has been designed to complement the input variables retrieved from other sources (basic data, questionnaire on NCD risk factors, sensor data). The questionnaire asks users which type of diabetes they have, for how long they had it, and how they manage it, e.g., oral medications, insulin injections, etc. It includes questions on blood glucose levels and associated symptoms. Questions on devices such as closed loop systems and insulin pumps are also envisaged.

The melanoma questionnaire, attached in Annex 3, includes seven different questions to investigate users' skin reaction to heavy sun exposure, mole count, and previous cases of skin cancers.



Figure 3. Example of how questions of the specific melanoma questionnaires will be shown on the App

The information collected through the disease-specific questionnaires will be used by the WARIFA App to elaborate the output variables described in Chapter 3.

2.5 DATA FROM SENSORS

Information collected through users' replies to the above-described questionnaires will be complemented with **data from sensors**, when available. When using sensors and their associated online servers/clouds, data will be transferred through the WARIFA App and into the backend server. The reason for this is to be able to provide near real-time feedback to the users, from the algorithms running on the smartphone. This approach also enables an easy way of disabling the data transfer for the user if wanted, keeping the control of the security and privacy at the end-users' side.

2.5.1 Activity trackers

Sensors from **activity trackers** (continuous data collection) will be used to track certain parameters including heart rate, sleep, number of steps, calories burned, duration of physical activity, etc. This functionality is under development within WP3, and the list of final selected parameters will be included in the updated version of D2.7.

The physical activity trackers used for the collection of data include **Fitbit wearables and wearables that have third-party integration with Google Fit**, e.g., Samsung Galaxy Watch 6 (see Figure 4). For users in the iPhone ecosystem, data is also collected from Apple Health. The data from the physical activity trackers will be synced through the App after the user gives respective consents and permissions. For physical activity, both self-report and sensors will be used since this variable is both an input variable and an output variable (for follow-up after an intervention through the App).



As explained in D3.4, the selection of Fitbit as the main vendor of devices for physical activity and lifestyle data was made partly due to its large market shares, and that it can provide many different devices that can fit for different users' preferences, and the good possibilities to access data.



Figure 4. Examples of Fitbit devices compatible with Google Fit. Images: www.fitbit.com.

Accurate location from sensors will be preferable, but some users may be reluctant to give such precise information. If the user gives consent to the WARIFA App to fetch GPS data, there are two options available (see Figure 5):

- Fetch the precise location automatically (which requires more battery if location is collected at regular intervals in the background but gives very accurate data ~ 25 meters).
- Fetch the approximate location (which requires less battery but gives less precision ~ few kilometers in the worst case).

If the user does not give consent and enters the location manually, it will show related/nearby places. The user can then select the relevant one from the options.

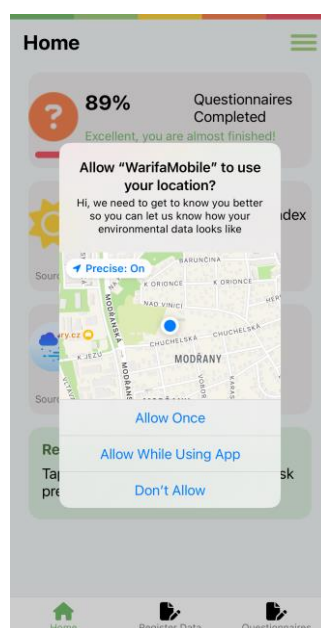


Figure 5. Pop-up request to allow WARIFA to fetch users' location



If the user decides to give consent at a later time, they are able to do that from the settings page.

2.5.2 Glucose monitoring sensors

Continuous Glucose Monitoring sensors (CGMs) are also considered sensor devices and are used to track the user's blood glucose values. These sensors can be either used as stand-alone devices or as part of a hybrid-closed-loop system (i.e., connected to an insulin pump). The most used CGM sensors in the three countries selected as trial sites by WARIFA (i.e., Spain, Romania, and Norway) will be reviewed and tested in the WARIFA project. These include:

- Abbott – Freestyle Libre 2 and 3
- Medtronic – Guardian 3 and 4
- Dexcom – G6 and G7

As reported in D3.4, at the moment, the project uses data from Abbott's Freestyle Libre2 and Libre3 sensors, while use of data from the Medtronic and Dexcom devices is yet to be implemented due to data protection issues.

In addition to the CGMs mentioned above, all sensors and devices (not limited to CGMs, but also insulin pumps and traditional glucometers) available in the Sensotrend Uploader can be stored and used from the WARIFA backend server. These include:

- **Glucometers**
 - Abbott: Freestyle Freedom Lite, Freestyle Lite, Precision Extra
 - Accu-Chek: Aviva Connect, Guide, Guide Me,
 - Ascencia (Bayer): Contour Next, Contour Next Link, Contour Next Link 2.4, Contour Next One, Contour Next USB, Contour USB
 - CareSens: Dual BLE, N Premier BLE *[Only available on Mac]*
 - OneTouch: Ultra 2, UltraMini, Verio, Verio Flex, Verio IQ
- **CGMs**
 - Abbott: Freestyle Libre, Freestyle Libre Pro
 - Dexcom: G4, G5, G6
 - Medtronic: Guardian, Enlite
- **Insulin pumps**
 - Animas: Ping, Vibe
 - Insulet: Omnipod, Omnipod DASH
 - Medtronic: 523, 530G, 554, 640G, 670G, 723, 754,
 - Tandem: t:flex, t:slim, t:slim G4, t:slim X2

The whole list is available in the following link:

[How to Upload Your Diabetes Data | WARIFA Knowledgebase.](#)

To share diabetes data from these devices with the WARIFA system, the user must transfer the data via the desktop app 'WARIFA Uploader' (run on a PC) using Sensotrend Oy's server solution. Once installed on the user's PC, the user can use the uploader logging in with their WARIFA app credentials. After login, the user must select the preferred device (CGM, glucometer or insulin pump, this selection can be changed anytime in the Uploader). Then they can initiate the upload of data into WARIFA server (see Figure6).

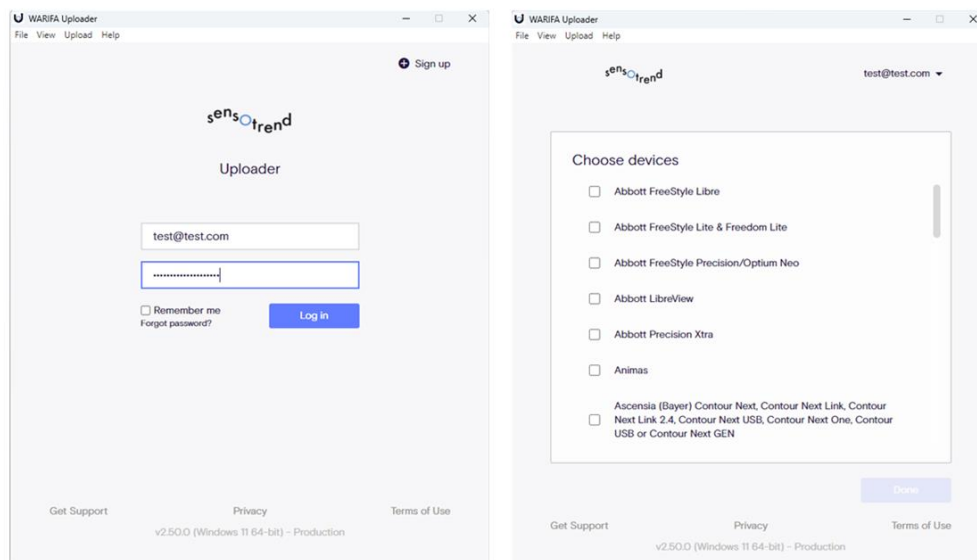


Figure 6. WARIFA uploader where the user can upload data from their preferred diabetes device(s)

When uploading data, the device must be connected to the user's PC via a cable, wirelessly or through a vendor app. E.g., if the user uses FreeStyle Libre2 or Libre3 (by Abbott), they must download the data from the vendor app on their mobile phone or through the LibreView website.

2.6 DATA FROM WEBSITES/DATABASES

Air pollution/air quality index (AQI), atmospheric pressure (e.g., from <https://openweathermap.org/api/air-pollution>), **ultraviolet (UV) index, temperature, weather data** (e.g., from <https://www.yr.no>), **altitude** will be retrieved from the App itself as both iOS and Android platforms include this information from the sensors in the phone.

Such data includes air pollution data and general weather parameters e.g., temperature and UV index, which can help determine the user's historic and real-time sun/UV exposure (e.g., how much UV radiation the user has been exposed to in a certain period, what the UV index is currently, or at a given day at the user's location).

OpenWeatherMap can be used to gather pollution data that measure air quality parameters such as particulate matter, ozone, nitrogen dioxide, and carbon monoxide. Pollution data can help in providing informed personalized recommendations to take appropriate precautions for the user's health and wellbeing. For instance, this can help make better decisions on the user's physical activity plans outside, such as recommending indoor exercises due to high air pollution in the user's area. For the WARIFA App, AQI has been chosen as the pollution parameter to collect and display to the user (the index represents an accumulation of all the major air quality parameters such as CO, NO₂, O₃, and PM_{2.5}).

The user can click on the desired metric box (e.g. Figure7) and will be presented with a more detailed description of the data, including more information than presented in the home screen.

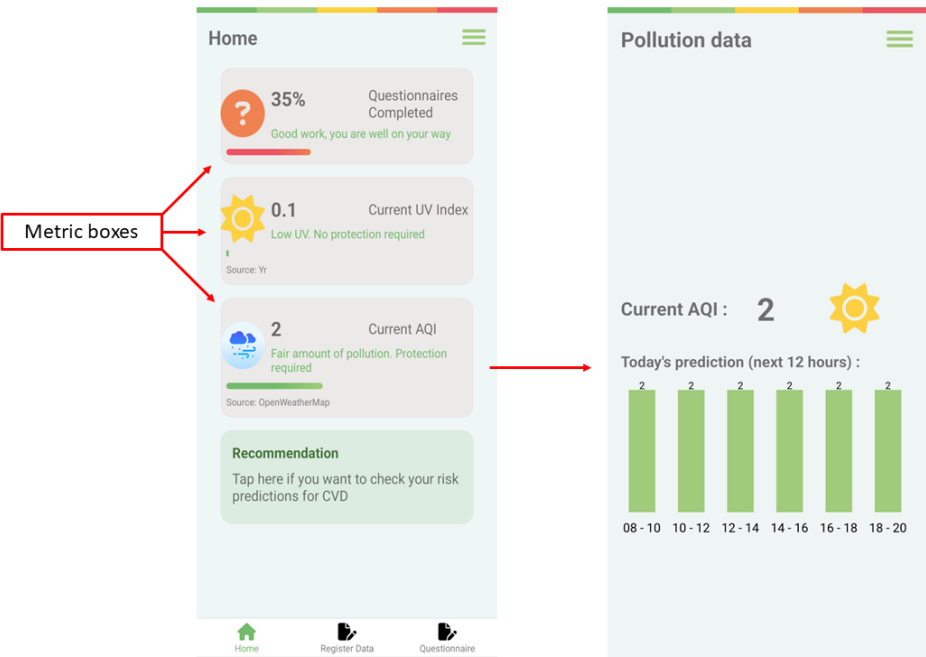


Figure 7. A metric box contains information on different topics and parameters, such as questionnaires, UV index, air pollution/air quality index (AQI), and more. By clicking a box, the user receives more detailed information, as shown in the figure when clicking the AQI box.








3 OUTPUT VARIABLES FOR THE AI TOOL

Output will be based on the user's needs and preferences. The WARIFA App foresees three types of output:

1. Preventive personalized recommendations about one or more NCD risk factors (Section 3.1).
2. Risk scores accompanied by tailored feedback (Section 3.2).
3. Other output variables (Section 3.3) which refer to several of the input variables that are also output variables, i.e. the user can monitor changes in the risk factors and track the progress.

3.1 PERSONALIZED RECOMMENDATIONS

A central part of the WARIFA App is its preventative recommendations. The App will provide personalized recommendations through feedback messages on the main NCD modifiable risk factors – healthy eating, alcohol and tobacco use, physical activity, and sun habits. These are mainly based on the World Health Organization (WHO)'s official recommendations.

TYPES OF FEEDBACK:	
	• Healthy eating
	• Alcohol consumption
	• Tobacco use
	• Physical activity
	• Sun protection

To create feedback messages, a template with seven columns was prepared by the ULPGC research team: Question; Recommendations; Questionnaire response; Basic message; Guide message; Other recommendations; and Bibliography (mainly WHO, but also other including national guidelines, if relevant).

Based on the template, recommendation/feedback tables have been developed for healthy eating and alcohol by the ULPGC research group, for tobacco/cigarette use and physical activity by the UiT research team, and for sun protection by the NSE, UiO, and URJC research teams.

In addition, the WP5 team has developed the following schematic diagram (Figure 8) representing the rules engine with input, database for available feedback messages, and interface to additional context data:

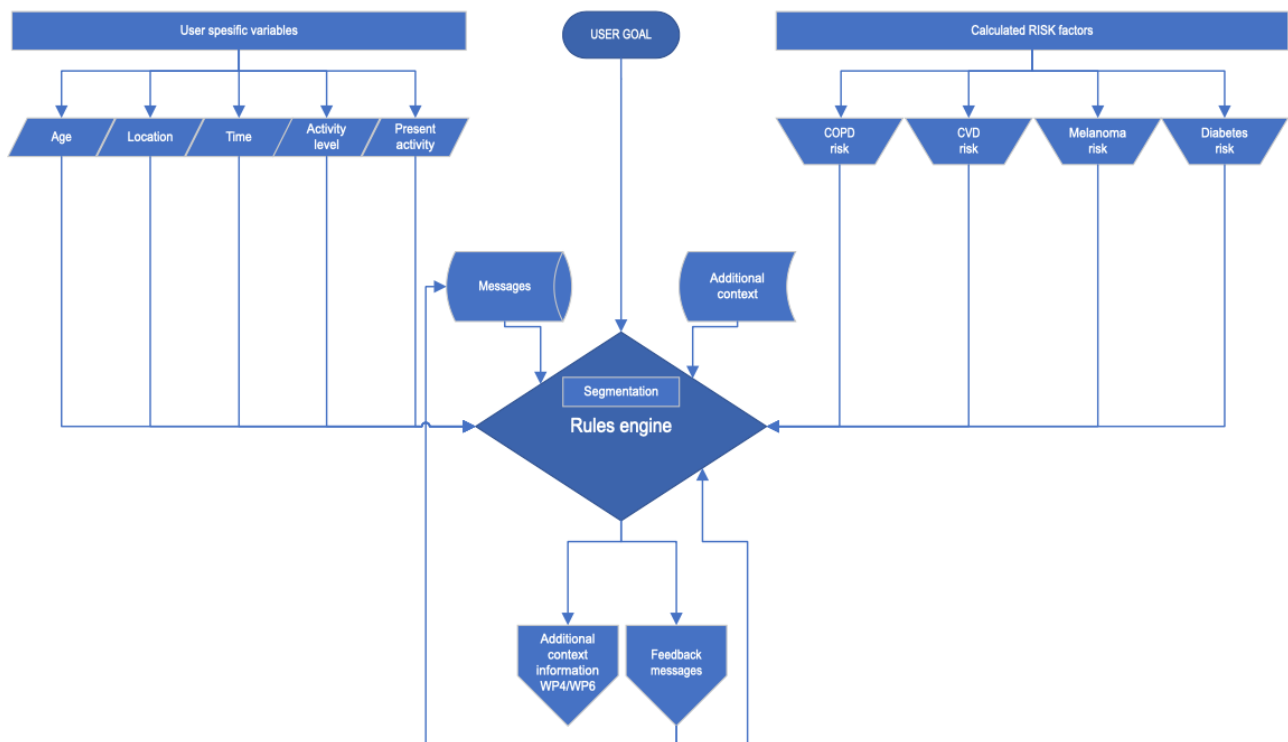


Figure 8. Illustration of rules engine with input, database for available feedback messages, interface to additional context data, and result in the form of feedback messages and additional context information fed back to WP4 and WP6.

Examples of feedback messages are included in Annex 4. Moreover, for sun habits, sun protection recommendations will be complemented with a **dynamic UV index tool showcasing daily UV levels** based on the user's location, which will help them to limit harmful exposure to UV rays (Figure 9).

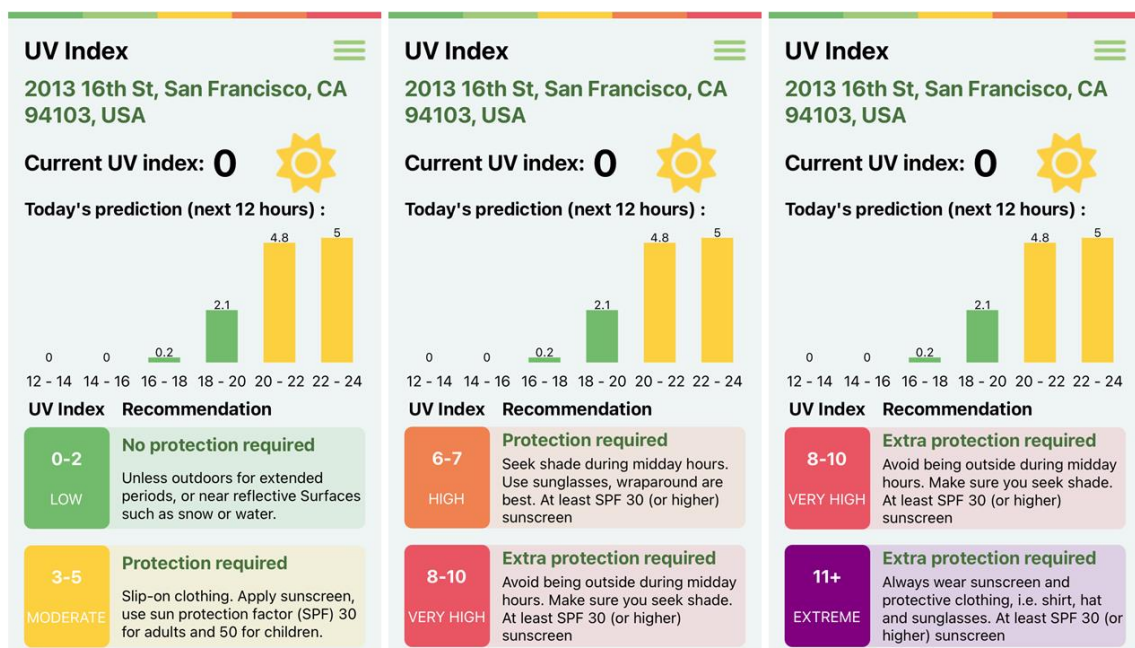


Figure 9. UV Index Tool, based on guidelines by the WHO for the different UV categories, with related recommendations.



The work on personalized recommendations for NCD prevention is ongoing, and the project's technical teams are discussing the latest details e.g., whether to accompany messages with pictures, when sending the messages, etc. The feedback messages are being developed and integrated into the App within WP3 and they will be tested in dedicated focus groups in WP7.

The App system will generate **feedback messages that are personalized and engaging for the user and respect their chosen goals and preferences:**

- The message is personalized with the user's name for a more engaging experience.
- Feedback is tailored to the user's current activity level.
- Actionable advice is provided, considering the context.
- Messages maintain a friendly and encouraging tone.
- Positive reinforcement is used to motivate users. For example, instead of "Don't skip your workouts," we say "You're doing great with your workouts! Keep up the good work".
- Avoid repetitive messages by creating a pool of diverse feedback messages to improve the user's experience.

In addition to personalized recommendations, WARIFA will entail a sort of **diary functionality** that will record relevant lifestyle data over time and provide visualized feedback on whether risk factors are improving. In the following deliverable version, more details will be given on the final diary functionality developed for the App.

3.2 RISK CALCULATION/CLASSIFICATION

Risk prediction calculation or classification for three chosen clinical conditions (**melanoma, CVD, and diabetes**) are so far being developed as additional key outputs of the WARIFA App. The App will generate personalized outcomes based on all available information about the user, enriched with other relevant contextual data.

The risk scores will be presented as graphs using colours and/or values. Importantly, the App will not only display a graph/value but also the uncertainty and explain to the user that accuracy of these scores has their limitations and will depend on the accuracy of the data entered by the user.

3.2.1 Melanoma

Melanoma risk will be classified in five classes (see Figure 10) and will be **presented graphically** to provide high usability and easy understanding for the user: Very much below average; Below average; Average; Above average; and Very much above average. Compared to exact risk numbers this approach appears better and less prone to scare users. This is in line with current findings in the WP7 focus group interviews.

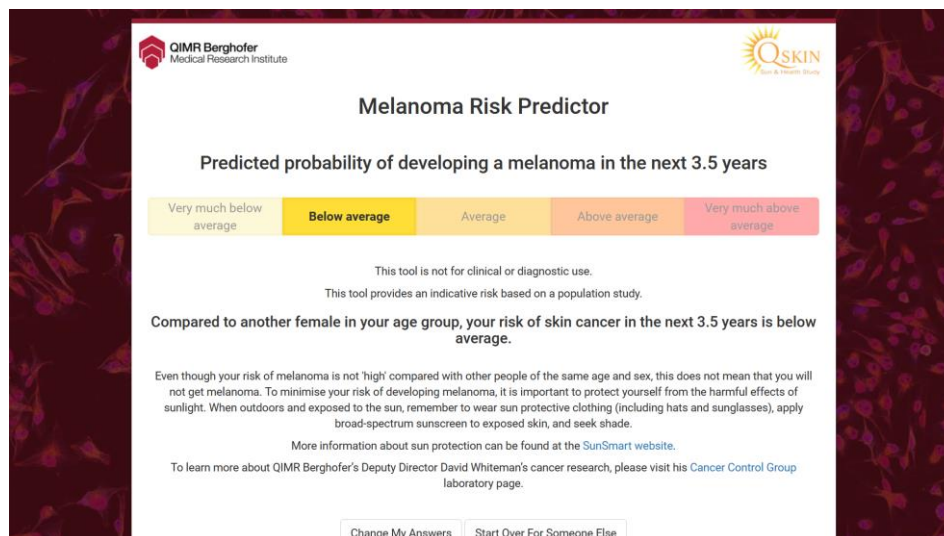


Figure 10. Example of a potential reference to consider for melanoma risk classification tool's development on the WARIFA App

3.2.2 CVD

The model for **calculation of CVD risk** (in the general population) developed by WP6 per today includes age, sex, total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides, systolic blood pressure, family history of myocardial infarction and hypertension, physical activity level, and smoking status (see table on below).

Factor	Description	Type
AGE	Age of the individual (years)	Discrete
SEX	Sex of the individual at birth	Binary
TRG	Triglycerides concentration (mg/dL)	Continuous
LDL	LDL cholesterol level (md/dL)	Continuous
HDL	HDL cholesterol level (md/dL)	Continuous
SM	Smoking status	Binary
PA	Physical activity level (minutes/week)	Continuous
FMH	Family history of myocardial infarction or hypertension	Binary
SBP	Systolic blood pressure level (mmHg)	Continuous

The WP6 research team is currently developing the CVD risk calculator using a Bayesian belief model (BBN). The clinical variables in the model are based on the directed acyclic graph shown in Figure 11.

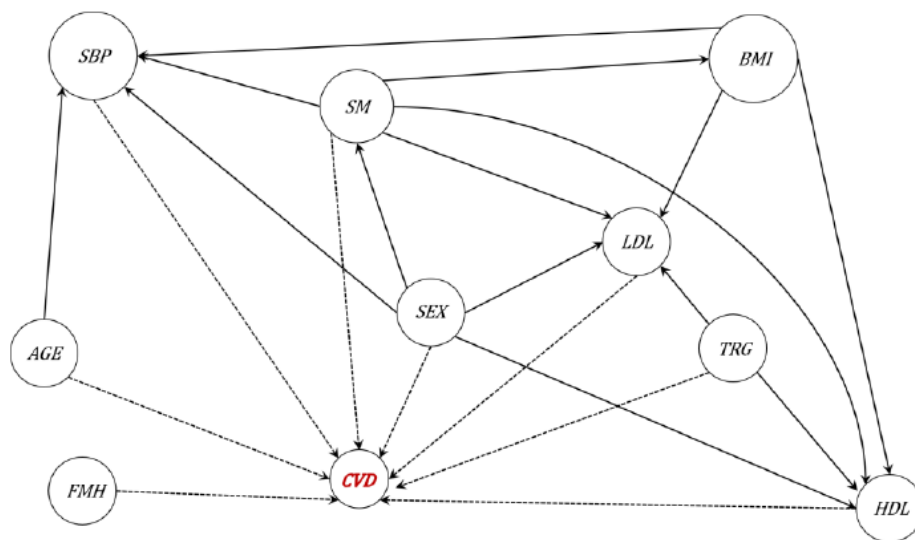


Figure 11. Clinical variables considered for CVD risk prediction

Individual predictions will be presented as a risk curve (see Figure 12) and will be displayed together with the population risk curve to have a reference, along with text explanations to interpret the curve. It will be important to communicate in a way that does not scare the users. Additionally, it will be possible to modify one or more factors and see how the manipulated risk changes with respect to the original risk prediction, to have an idea on how some modifications can influence risk reduction.

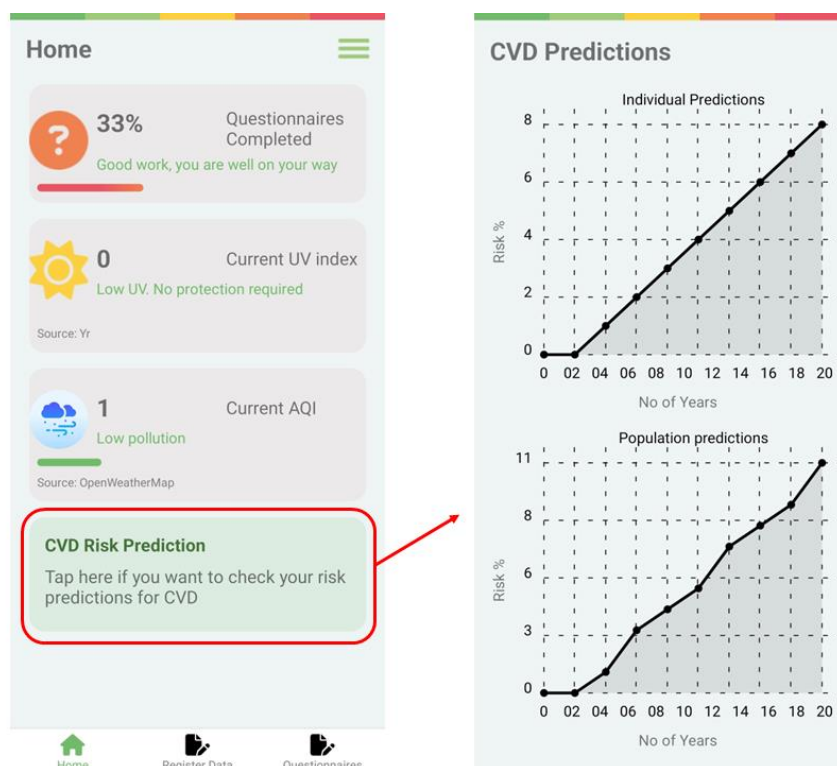


Figure 12. Preliminary example of the CVD risk prediction feedback page, appearing after clicking on the CVD risk prediction box found in the home screen



3.2.3 Diabetes

For the diabetes functionality, the aim is to provide functionalities different from existing solutions.

The main output variable for type 1 diabetes will be the predicted glucose concentration (see Figure 13), which will lead to recommendations, and its variations i.e., hypoglycaemia/hyperglycaemia/time in range, etc. Currently, ULPGC and URJC teams are collaborating to advance on glucose prediction.

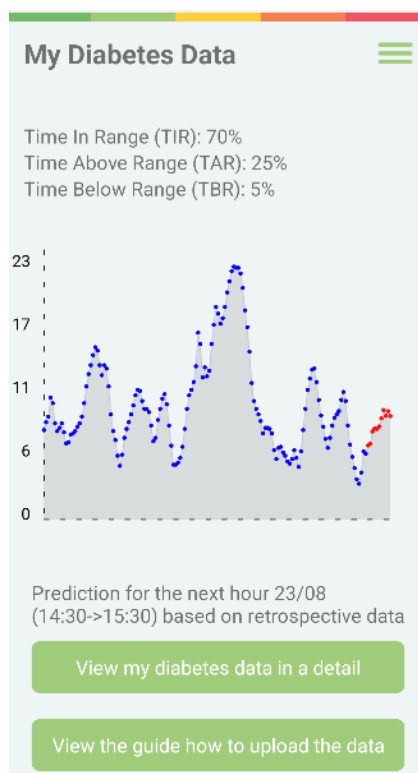


Figure 13. Diabetes feedback functionality



4 END-USER INTERFACE DESIGN AND RELATED REQUIREMENTS

User experience, also commonly known as UX, is the process of enhancing user satisfaction with a product by improving the usability, accessibility, and pleasure provided in the interaction with the product. The mobile user experience encompasses the user’s perceptions and feelings before, during, and after their interaction with an App. Generally, a mobile App’s user experience influences how users perceive it. Users often ask themselves if the App provides them value, if it is easy to use, and if it will help them fulfill their goal.

A user-friendly front end for smartphones with language versions for English, Norwegian, Spanish, and Romanian has been envisaged for the WARIFA App. It will display recommendations and relevant predictions on single risk factors and have a diary-like functionality to track changes of risk levels over time.

The language on the WARIFA App is based on the language set in the user’s smartphone operating system (OS) and will be transferred to the App and thereby also the questionnaires. This means that if the user has a smartphone set to Norwegian, the WARIFA user interface and questionnaires will automatically be in Norwegian. However, the user may change their preferred language in the App’s settings (Figure 14).

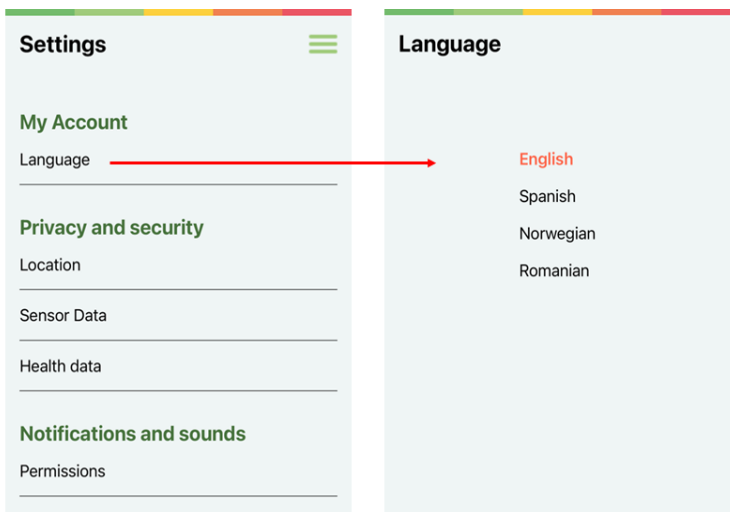


Figure 14. Settings screen, where the user can change the language of the App

WARIFA App layout e.g., font, colours are based on the WARIFA project’s style guide and includes a base colour (“almost black”), a headline colour (“dark green”), and element or logo colours (“green”, “light green”, “yellow”, “orange”, and “red”), as shown in Figure 15 below.

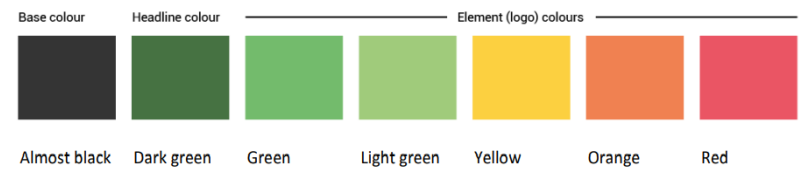


Figure 15. Colours used on the WARIFA app, including a base colour, a headline colour, and element or logo colours



The WARIFA colours and font have been applied to the whole interface of the App, as shown in the example below (Figure 15).

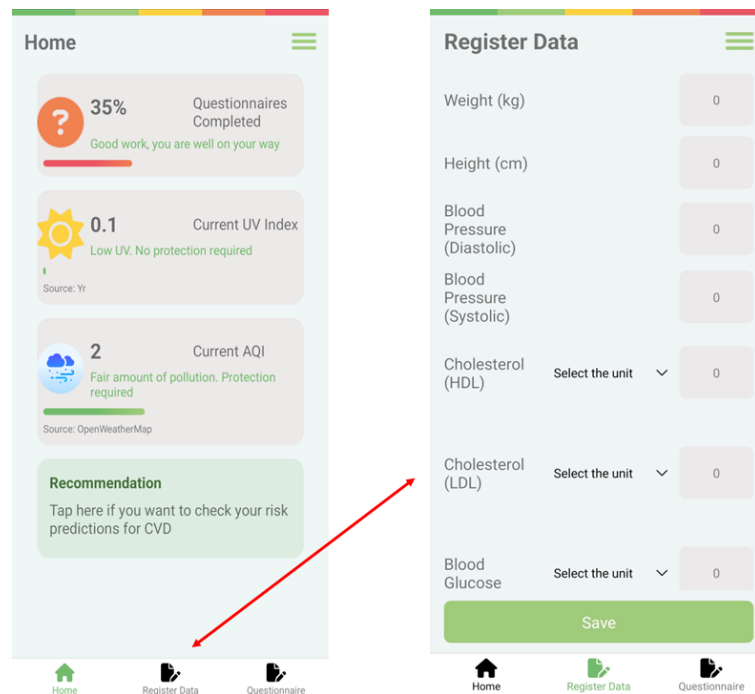


Figure 16. Example of layout and design of an App page.

As an update since D3.3, new colours have been chosen for the UV index tool (see Figure 9), following the WHO guidelines. These colours represent severity of UV exposure, and recommendations are given based on the values of the UV index in the user's location.

The App is tailored by the users' needs and preferences regarding which functionality/functionality they want to use/engage in. Some users might want only one of the functionalities that WARIFA offers, and within this functionality they might only want parts of it (e.g., only monitoring exposure over time and no risk prediction), while others might want a larger 'package' of functionalities.

A permission request that is currently under development is the consent for terms and conditions and will include permission to collect and store data provided by the user in the questionnaires. The user will be asked to give this consent during initial use of the App.

It is important to tell the user that the more data they provide the better the predictions and tailored recommendations will be. Basic gamification techniques, e.g., use of badges, rewards or elements of competition may motivate users and could increase adherence to the App.

As described in Chapter 2, input in the WARIFA App is a combination of user-generated data, data collected with sensors and public websites/databases. The App questionnaires have been developed considering WP7 focus groups. Feedback emerged from the implemented focus groups indicated that users would only want to spend up to 5-10 minutes to reply to an initial questionnaire, and then 5-10 minutes daily. For some users this number is expected to be even lower. For this reason, the input questionnaires have been conceived to be short, easy to reply, and user-friendly to browse on the App.



The output data will be visualized in the form of attractive and effective short feedback messages while risk predictions will be visualized using graphics and colour based scales. The frequency of App feedback can be set by the users themselves, which is a prerequisite to ensure that they do not feel overwhelmed by the App interactions.

The App's current format is therefore the result of regular interactions with potential users through focus group activities promoted by WP7. Moreover, feedback from WP2 stakeholder engagement activities and D2.2 outcomes have fed the technical development of the App. Importantly, the App prototype is intended to be piloted in Norway, Spain, and Romania with end-users. Usability will be assessed in the pilots and used to fine-tune the App at the end of the project.



5 CONCLUSIONS

The current deliverable describes the progress undertaken by the WARIFA consortium in the selection of the input and output variables for the development of WARIFA AI tool. The aim is to generate innovative personalized risk prediction and support for preventive behaviour change in regard with the major, morbidity and mortality-causing chronic diseases and lifestyle-related risks.

The WARIFA AI-based App blueprint includes input and output variables where a connection with risk of disease is strongly confirmed through epidemiological studies. Moreover, it considers variables for which the research in WARIFA can bring valuable new information regarding their role as potential additional risk factors.

As the App development is still ongoing, the information presented in the current D2.7 will be refined and supplemented in the last phases of research within WARIFA. An updated deliverable will be submitted to provide the final version of the Blueprint reporting the definite list of input and output variables and latest end-user design and usability elements, if applicable.



ANNEX 1 – GENERAL QUESTIONNAIRE ON NCD RISK FACTORS

BASIC DATA ENTRY:

With this information, we can help you calculate your risks more accurately and provide you with more personalised recommendations.

1. What year were you born?

2. Sex

Male

Female

I prefer not to answer

3. Weight

4. Height

5. Automatic geolocation?

Yes

No

6. Location

GOALS:

Here you can select the areas you are interested in for prevention and/or management.

Questionnaire filling frequency

Diabetes questionnaire

☐

ON

☐

OFF

Healthy eating questionnaire

☐

ON

☐

OFF

Healthy habits questionnaire

☐

ON

☐

OFF

Sun habits questionnaire

☐

ON

☐

OFF



BASIC DATA ADVANCED (Health status and socio-economic questions):

1. Do you have or have you had?

- ☐ High blood pressure
- ☐ High cholesterol
- ☐ Atrial fibrillation (heart flutter)
- ☐ Heart attack
- ☐ Heart failure
- ☐ Stroke/brain haemorrhage
- ☐ COPD (Chronic Obstructive Pulmonary Disease)
- ☐ Diabetes
- ☐ Cancer
- ☐ None of these

2. What is your civil(marital) status?

Choose an option

3. What is your highest completed education?

Choose an option

4. What is your occupational status or current life situation? Choose the category that fits best

Choose an option

5. How many people 18 and over are in your household including yourself?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10+

6. How many people under 18 are in your household?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10+

7. How do you consider the finances of your household to be overall during the last year?

Choose an option



HEALTHY HABITS:

1. How often do you drink alcohol?

Choose an option

2. How many units of alcohol do you usually take when you drink? (Units of alcohol)

Choose an option

units of alcohol

3. How often do you drink 6 units of alcohol or more on one occasion?

Choose an option

4. During the last 7 days, on how many days did you do vigorous physical activities (makes you breathe much more than usual) like heavy lifting, digging, aerobics, running or fast bicycling of at least 10 minutes duration?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

5. During the last 7 days, on how many days did you do moderate physical activities (makes you breathe a little more than usual) like carrying light loads, bicycling at a regular path, or double tennis? (Do not include walking)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

6. During the last 7 days, on how many days did you walk at least 10 minutes at a time?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

7. How much time (hours) did you spend sitting on a normal weekday during the last 7 days? (Do not include the time you sleep).

hour(s)

8. How often do you smoke?

Choose an option

9. How often do you vaporize (vape) e-cigarettes?

Choose an option

HEALTHY EATING:

1. How many servings per day of fruits and berries do you usually eat during one day? (1 handful counts as one serving)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10+

2. How many servings per day of lettuce and vegetables (except potatoes) do you usually eat per day? (1 carrot or bowl of lettuce counts as one serving)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10+

3. How many glasses of sugar-sweetened drinks (soda, juice, energy drink) do you usually drink per day?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15+

4. How many times do you usually eat fish and fish products for dinner per week?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

5. How many times do you usually eat red meat (pork, beef, lamb) for dinner per week?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

6. How many times do you usually eat processed meat (sausages, hamburgers, meatballs) for dinner per week?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

7. How many times a week do you eat any of these industrial convenience foods (not homemade) such as lasagna, instant soups, nuggets...?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

8. How many times a week do you eat desserts or snacks of industrial origin (not homemade) such as ice cream, cookies, chips, energy bars...?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

9. How often do you add extra salt to your food?

Choose an option



SUN HABITS:

1. Do you limit time in the sun at the time of the day when the sun is strongest?

- ☐ Never
- ☐ Sometimes
- ☐ Always

2. Do you spend time in the shade at the time of the day when the sun is strongest?

- ☐ Never
- ☐ Sometimes
- ☐ Always

3. Do you wear protective clothing?

- ☐ Never
- ☐ Sometimes
- ☐ Always

4. Do you wear a hat?

- ☐ Never
- ☐ Sometimes
- ☐ Always

5. Do you use sun sunglasses?

- ☐ Never
- ☐ Sometimes
- ☐ Always

6. Do you use sunscreen?

- ☐ Never
- ☐ Sometimes
- ☐ Always



7. What is the sun protection factor (SPF) of your sunscreen?

Choose an option

8. Do you currently use a sunbed or sunlamp?

- ☐ Never
- ☐ Sometimes
- ☐ Always

Score: 0 / 16 points

SAVE 



ANNEX 2 – DIABETES QUESTIONNAIRE

Diabetes (initial – main questionnaire):

- 1. Do you know what type of diabetes you have?**
 - a. Diabetes Mellitus type 1 or LADA.
 - b. Diabetes Mellitus type 2.
 - c. Another type.
- 2. How long have you had Diabetes Mellitus?**
 - a. ≤2 years.
 - b. 2-5 years.
 - c. 6-10 years.
 - d. 11-20 years.
 - e. >20 years.
- 3. Please indicate whether you agree with the following sentences: I have suffered a moderate hypoglycemic event in the past 6 months:**
 - a. Yes.
 - b. No.
- 4. I always have symptoms when my blood glucose level is low:**
 - a. Yes.
 - b. No.
- 5. I am worried to not recognize I have a low blood glucose level:**
 - a. Yes.
 - b. No.
- 6. I can recognize that I have low blood glucose if I have symptoms:**
 - a. Yes.
 - b. No.
- 7. I have hypoglycemia symptoms with a normal blood glucose level:**
 - a. Yes.
 - b. No.
- 8. How do you manage your diabetes?**
 - a. Pills.
 - b. Pills and insulin.
 - c. Only insulin.

*Pills: go to question 15.
*Insulin or both: go to question 9.
- 9. What type of insulin do you use?**
 - a. Long-acting insulin.
 - b. Quick (rapid)-acting insulin.
 - c. Both.
 - d. Another type.

*Long-acting insulin: skip questions 12, 13 and 14.
*Both: go to question 10, skip questions 14,18 and 19.
*Quick-acting insulin: go to question 12.
- 10. How much long-acting insulin do you take?**
 - a. Answer: (Number of units per day).
- 11. Do you know the brand of insulin you use?**
 - a. Lantus or Abasaglar (insulin Glargine).
 - b. Toujeo (insulin Glargine).



- c. Levemir (insulin Detemir).
 - d. Tresiba (insulin Degludec).
 - e. Insulatard or Humulin NPH (NPH insulin).
 - f. I do not know.
- 12. How much quick (rapid)-acting insulin do you take? (average)**
- a. Answer: (Number of units per day).
- 13. Do you know the brand of quick-acting insulin you use?**
- a. Fiasp (fast insulin Aspart).
 - b. Novorapid or NovoLog (insulin Aspart).
 - c. Humalog (insulin Lispro).
 - d. Apidra (insulin glulisine).
 - e. Actrapid or Regular Humulin (regular insulin).
 - f. I do not know.
- 14. Do you use an insulin pump?**
- a. Yes.
 - b. No.
- *Yes: activate questions 18 and 19.
- *No: skip questions 18 and 19.
- 15. Do you know your latest Hb1Ac?**
- a. Exact value: (%).
 - b. <7%.
 - c. 7-7,5%.
 - d. 7,6-8%.
 - e. >8%.
 - f. I do not know.
- 16. Do you have damage to any of the following organs as a result of diabetes? Mark all that apply:**
- a. No.
 - b. Yes, I have diabetic retinopathy.
 - c. Yes, I have diabetic nephropathy.
 - d. Yes, I have diabetic neuropathy.
- 17. Do you know your kidney function filtration rate?**
- a. >60ml/min/1,73m².
 - b. 45-59ml/min/1,73m².
 - c. 30-44ml/min/1,73m².
 - d. <30ml/min/1,73m².
 - e. I am on haemodialysis.
 - f. I do not know.
- 18. Do you use a sensor connected to an insulin pump (closed loop) or sensor and insulin injections?**
- a. Closed loop system.
 - b. Sensor and insulin pump without closed loop system.
- *Closed loop system: go to question 19.
- *Without closed loop system: skip question 19.
- 19. What closed loop system do you use?**
- a. Minimed 780G/Guardian sensor 3/4.
 - b. Accu-Chek Insight/Dexcom G6. Diabeloop (DGBL 1).
 - c. Tandem x:slim X2/Dexcom G6. Control IQ.
 - d. CamAPS or other devices.



20. Do you use a continuous glucose monitoring sensor?

- a. Abbott Freestyle libre 2.
- b. Abbott Freestyle libre 3.
- c. Dexcom G4.
- d. Dexcom G5.
- e. Dexcom G6.
- f. Dexcom One.
- g. Medtronic Guardian.
- h. Medtronic Enlite.
- i. Other sensor.

Diabetes (continuation):

1. Please indicate whether you agree with the following sentences: I have suffered a moderate hypoglycemic event in the past 6 months:

- a. Yes.
- b. No.

2. I always have symptoms when my blood glucose level is low:

- a. Yes.
- b. No.

3. I am worried not to recognize I have a low blood glucose level:

- a. Yes.
- b. No.

4. I can recognize that I have low blood glucose if I have symptoms:

- a. Yes.
- b. No.

5. I have hypoglycemia symptoms with a normal blood glucose level:

- a. Yes.
- b. No.

* If previous treatment insulin only or both, don't ask question 6.

6. How do you manage your diabetes?

- a. Pills.
 - b. Pills and insulin.
 - c. Only insulin.
- *Pills: go to question 13.
*Insulin or both: go to question 7.

*If previous treatment only quick rapid-acting insulin, go to question 10.

7. What type of insulin do you use?

- a. Long-acting insulin.
 - b. Quick (rapid)-acting insulin.
 - c. Both.
 - d. Another type.
- *Long-acting insulin: skip questions 10,11 and 12.
*Both: go to question 8.
*Quick-acting insulin: skip questions question 8 and 9.

8. How much long-acting insulin do you take?

- a. Answer: (Number of units per day).





9. Do you know the brand of insulin you use?

- a. Lantus or Abasaglar (insulin Glargine).
- b. Toujeo (insulin Glargine).
- c. Levemir (insulin Detemir).
- d. Tresiba (insulin Degludec).
- e. Insulatard or Humulin NPH (NPH insulin).
- f. I do not know.

10. How much quick (rapid)-acting insulin do you take? (average)

- a. Answer: (Number of units per day).

11. Do you know the brand of quick-acting insulin you use?

- a. Fiasp (fast insulin Aspart).
- b. Novorapid or NovoLog (insulin Aspart).
- c. Humalog (insulin Lispro).
- d. Apidra (insulin glulisine).
- e. Actrapid or Regular Humulin (regular insulin).
- f. I do not know.

12. Do you use an insulin pump?

- a. Yes.
- b. No.

*Yes: activate questions 16 and 17.

*No: skip questions 16 and 17.

13. Do you know your latest Hb1Ac?

- a. Exact value: (%).
- b. <7%.
- c. 7-7,5%.
- d. 7,6-8%.
- e. >8%.
- f. I do not know.

*14: If previously the user has answered yes to all sentences, do no repeat question.

14. Do you have damage to any of the following organs as a result of diabetes? Mark all that apply:

- a. No.
- b. Yes, I have diabetic retinopathy.
- c. Yes, I have diabetic nephropathy.
- d. Yes, I have diabetic neuropathy.

15. Do you know your current kidney function filtration rate?

- a. >60ml/min/1,73m².
- b. 45-59ml/min/1,73m².
- c. 30-44ml/min/1,73m².
- d. <30ml/min/1,73m².
- e. I am on haemodialysis.
- f. I do not know.

16. Do you use a sensor connected to an insulin pump (closed loop) or sensor and insulin injections?

- a. Closed loop system.
- b. Sensor and insulin pump without closed loop system.

*Closed loop system: go to question 17.

*Without closed loop system: go to question 18.



17. What closed loop system do you use?

- a. Minimed 780G/Guardian sensor 3/4.
- b. Accu-Chek Insight/Dexcom G6. Diabeloop (DGBL 1).
- c. Tandem x:slim X2/Dexcom G6. Control IQ.
- d. CamAPS or other devices.

18. What type of sensor do you use?

- a. Abbott Freestyle libre 2.
- b. Abbott Freestyle libre 3.
- c. Dexcom G4.
- d. Dexcom G5.
- e. Dexcom G6.
- f. Medtronic Guardian.
- g. Medtronic Enlite.



ANNEX 3 – MELANOMA QUESTIONNAIRE

1) What was your natural hair color at age 18?

- Red or auburn
- Fair or blonde
- Brown
- Black

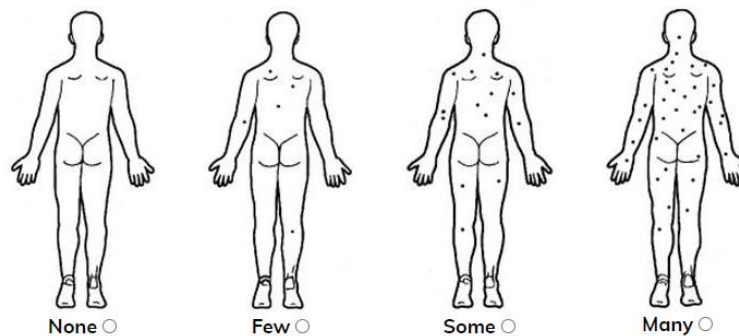
2) What is your skin's reaction to heavy sun exposure at the beginning of the summer?

- Brown without first becoming red
- Red
- Red with pain
- Red with pain and blisters

3) Mole count:

Number of moles when you were 18 years of age. Click on the diagram below that best describes you.

Moles are small brown or black spots on the skin, either raised or flat. Moles usually develop before age 20. Unlike freckles, moles do not change in appearance after sun exposure.



4) What is the number of moles on your body with more than 5 mm in diameter?

- [Number]

5) Have you ever had a non-melanoma skin cancer?

- No
- Yes

6) Have any of your first-degree relatives had melanoma?

- No
- Yes

7) Have you ever used a sunbed or sunlamp?

- No
- Yes

If yes, how many sunbed/sunlamp sessions have you had in total over your lifetime?

- 1-10 sessions
- More than 10 sessions



ANNEX 3 – EXAMPLES OF OUTPUT FEEDBACK TABLES

Healthy eating feedback example

Question	Recommendations (from the WHO)	Questionnaire responses	Basic message	Guide Message	Other recommendations	Bibliography
3.-How many servings per day of fruits and berries do you usually eat during one day? (1 handful counts as one serving)	400g Fruits and vegetables (Minimum 5 serving/day) Potatoes, sweet potatoes, cassava and other starchy roots are not classified as fruits or vegetables. 2 cups of fruit (4 servings) 2,5 cups of vegetables (5 servings)					





		0	<ol style="list-style-type: none"> 1. You are having a lot of difficulty when it comes to eating fruit. 2. Wow, your fruit intake is really low. 3. Your fruit consumption is too low. 	<ol style="list-style-type: none"> A. Don't worry, we know how to help you and we know you can. B. Set an achievable goal for yourself and you will be able to improve your eating habits, how about starting with a fruit a day? When is the easiest time for you? C. If you are thinking about improving your eating habits, we encourage you to take action. Take note of some of our suggestions 	<ol style="list-style-type: none"> I. You can start with one of your favourite fruits after a meal (for example as dessert for lunch). II. Try to eat fresh fruit that is in season, it will provide you with more nutrients. III. Fresh fruit is always best but occasionally you can prepare baked apples or pears. They turn out exquisite!!! IV. A good option is to place the washed and chopped fruit in the fridge in glass containers. Seeing it will be appetizing and you will surely eat something. V. Occasionally for dessert you can prepared baked fruit. VI. Eat raw fruits as often as possible. VII. Regular consumption of fruits is associated with a substantially lower risk of coronary heart disease, stroke, several major cancers, type 2 diabetes, cataracts and possibly hypertension. 	(1,2)
--	--	---	---	---	---	-------



		1	<ol style="list-style-type: none"> 1. Your fruit intake is below the recommendations of our experts. 2. Your fruit intake is low. 3. We see that you consume little fruit 	<ol style="list-style-type: none"> A. But do not get discouraged, here are some suggestions for improvement: B. Do you think you can improve it? We do! C. With your attitude and our recommendations, we can improve it, dare you? D. Our doctors and nutritionists know how to help you. 	<ol style="list-style-type: none"> I. Let's try to reach 2 pieces of fruit daily. What about a piece as dessert for lunch and one for dinner. II. Cut fresh fruit into a bowl and sprinkle with walnuts, almonds, etc. (no salted or fried). III. Place a basket with pieces of fruit on the kitchen counter. Having it on hand will facilitate its consumption. IV. Chop a piece of fruit, add 2 tablespoons of natural yogurt and sprinkle with cinnamon. It turns out an exquisite dessert. V. Choose from a wide variety of fruits (e.g., melons, berries, citrus and exotic fruits). VI. Chopped fruit can be accompanied with nuts, yogurt, cereal, etc. 	(1,2)
		2	<ol style="list-style-type: none"> 1. Not bad at all! 2. Good! Our experts consider that you are consuming the minimum recommended amount of fruit. 3. Your fruit consumption is within the minimum recommended by our experts. 4. You meet the minimum frequency recommended by our experts. 	<ol style="list-style-type: none"> A. Shall we look for options to improve it? B. Can we give you some ideas to get closer to the recommended amount? C. Do you want to take a step further to improve your diet? D. Would you like to try adding one more piece of fruit per day? 	<ol style="list-style-type: none"> I. Try to prefer local, fresh, and seasonal fruit. II. Be careful with dried fruits, consume them in moderation. III. Buy fresh fruit in season. IV. Dried fruits are high in fibre and more energy dense, therefore consume modestly. 	(1,2)



		3	1. Well done! Your frequency of fruit consumption is in line with the recommendations of our experts. Keep it up!	A. Let us give you some ideas.	<p>I. You can ensure to provide your body with antioxidants and beneficial bioactive substances if you consume fruits of different colours.</p> <p>II. It includes a variety of fruits to guarantee an assorted supply of vitamins, minerals, antioxidants, and fiber.</p> <p>III. Choose from the different fruit groups (e.g., citrus, berries, melons, stone fruits).</p>	(1–3)
		4	1. Very good. Keep it up like this.	A. Let us help you to achieve it!	<p>I. It would be perfect if you ate at least 3 fruits of different colours (red, yellow, green, purple, and white).</p> <p>II. Diversify your fruit intake, this is important for adequate micronutrient intake and avoid deficiencies.</p>	(1–3)

D2.7 – Blueprint for the design of the AI preventive system including input and output variables



		5	<ol style="list-style-type: none"> 1. Great! Your fruit consumption is optimal. 2. Excellent! You are perfectly meeting the recommendations of our experts. 	<ol style="list-style-type: none"> A. With this result we can only encourage you to continue like this and give you some ideas that may be interesting. B. Here you have some recommendations to continue like this. C. We can give you some ideas so you can continue this way. 	<ol style="list-style-type: none"> I. Make sure to consume a varied diet with foods from all food groups. II. Make sure to not neglect the other groups! III. Even though it's an important food group, don't neglect the other ones. IV. Our bodies are incredibly complex, and (with the exception of breast milk for babies) no single food contains all the nutrient we need for them work at their best. V. Our diets must therefore contain a wide variety of fresh and nutritious food to keep us going strong. VI. Choose wholegrains foods like unprocessed, they are rich in valuable fibre and can help you feel full for longer. VII. 	(1,4)
4.-How many servings per day of lettuce and vegetables (except potatoes) do you usually eat per day? (1 carrot or bowl of lettuce counts as one serving)						





		0	<ol style="list-style-type: none"> 1. Wow, you eat very few vegetables! 2. We can see that your vegetable consumption falls below our experts' recommendations. 3. Your vegetable intake falls below the minimum recommended by our experts. 	<ol style="list-style-type: none"> A. Would you like to improve your diet? You could start by including a vegetable in your lunch. B. We give you some ideas to help you eat better. Click here C. Did you know that eating them prevents serious illnesses? We help you to do it better. 	<ol style="list-style-type: none"> I. To start: include one vegetable at lunch. II. What if you search for recipes with vegetables, you think are appetizing and you make them once a week. III. One of the World Health Organization recommendations for the promotion of healthy diet and disease prevention is to incorporate vegetables to your diet. IV. A Good option is to place the vegetables in glass containers in the fridge. Seeing them will remind you how important it is to consume them!!! V. Include raw vegetables as snacks instead of foods high in sugars, fats or salt (processed). VI. Regular consumption of vegetables is associated with a substantially lower risk of coronary heart disease, stroke, several major cancers, type 2 diabetes, cataract and possibly hypertension. VII. Always having vegetables in the fridge Will facilitate their consumption. 	(1,2,5)
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		1	<ol style="list-style-type: none"> 1. We see that you are consuming vegetables, although you are below our recommendations. 2. You consume few vegetables. 3. Wow, how few vegetables you consume. 	<ol style="list-style-type: none"> A. It's OK, we'll guide you to do better. B. You know that they are important in the prevention of many diseases. C. Are you aware of their importance for disease prevention? We help you to consume them more. 	<ol style="list-style-type: none"> I. What if besides your weekly vegetable portion, you add a side salad to your lunch or dinner another day. II. Whenever you can, introduce small portions of vegetables into your meals, they will give colour to your dishes and little by little you will get used to their presence and flavour. III. A good option is to include vegetable and vegetable stir-fry recipes as a main course. IV. Give your vegetables a different touch by seasoning them with different fresh or dry spices. This way you avoid salt, and your dishes will be very tasty! V. Choose a variety of vegetables from all vegetable's subgroups (e.g., dark green, orange and salad vegetables such as cabbage, cucumbers, tomatoes) several times per week. VI. Decorate plates with slices of colourful vegetables. VII. Eat more vegetable-based dishes such as okra stew, green bean stew and mixed vegetables sauté. VIII. Use fresh or dried herbs, garlic, spices, flavoured vinegars, or lemon juice instead of salt to add flavour to vegetables. 	(1,2)
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		2	<ol style="list-style-type: none"> 1. Your vegetable intake is within the recommended minimum. 2. This is the minimum recommended by our experts. 3. Not bad! Your consumption is within the minimum. 	<ol style="list-style-type: none"> A. We suggest you to improve your consumption. Here are some ideas. B. Try mixing vegetables of different colours on your plate and you will see how you manage to consume more. C. We know you can do better. Here are some ideas 	<ol style="list-style-type: none"> I. Try to mix up the vegetable colours (eg: green and orange, red and green, etc). II. What do you think if you include a dark green vegetable and orange one daily! III. Buy fresh and seasonal vegetables and organize yourself to facilitate their consumption. IV. Include a wide variety of vegetables to guarantee an assorted supply of vitamins, minerals, antioxidants and fiber. V. Eat at least one dark green and one orange vegetable each day. VI. Buy fresh vegetables in season. 	(1,2)
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		3	<ol style="list-style-type: none"> 1. Very good! Your frequency of consumption is within the recommendations of our experts. 2. You are doing very well! 3. We can see those vegetables 	<ol style="list-style-type: none"> A. Do you want to stay on this line? B. Maybe it is within your reach to do even better. C. If you want some ideas to add more, click here. 	<ol style="list-style-type: none"> I. A healthy diet must meet a basic requirement: variety. Combining foods is a good choice. II. Including chopped fruit in your salad will give it a special touch, try it! III. Cook your vegetables controlling their time, in this way they maintain their nutrients. IV. The way vegetables are cooked is important for their nutritional contribution. Steamed, stir-fried, and microwaved are good choices. V. A healthy diet can be achieved by ensuring variety in food intake. VI. Cook dishes from other food groups and give it a twist with chopped fruit. VII. To preserve nutrients, do not overcook vegetables. VIII. Stir-frying, light microwaving and steaming rather than boiling are effective methods of cooking vegetables, this minimizes nutrient loss and provides a tasty product. 	(1,2)
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		4	1. Great! Keep it up like this	A. Let us help you to achieve it!	<p>I. How about you dare yourself and start a small project of a home or community garden. This way you guarantee more micronutrients for your health.</p> <p>II. Even if you eat enough vegetables, try to keep them varied, try new flavours. Surely you are missing many vegetables to try. Forward!!!</p> <p>III. If you sauté vegetables, use small amounts of vegetable oil such as olive oil, high oleic sunflower oil, etc. In this way you favour the absorption of some vitamins.</p> <p>IV. Select a variety of vegetables options both new foods and new recipes.</p> <p>V. If you use a small amount of oil, it can improve the absorption of fat-soluble vitamins such as vitamins A and E and carotenoids.</p>	(1–3)
		5 or more	<p>1. Brilliant! There is no shortage of vegetables in your daily life.</p> <p>2. Very good! Vegetables are a must in your diet!</p>	<p>A. We give you some curious ideas.</p> <p>B. Do you fancy a change when it comes to eating them?</p>	<p>I. Incorporate raw vegetables into yours snacks with healthy dips (low-fat or unsaturated fat).</p> <p>II. Although fresh vegetables are always better, you can choose to have frozen vegetables in your freezer without preservatives or additives.</p> <p>III. Eat raw vegetables as snacks with low-fat dip.</p> <p>IV. Stock up on frozen vegetables for quick and easy cooking.</p>	(1,2)

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3+4 (Fruits+Veg etables)	400g Fruits and vegetables (Minimum 5 serving/day) (1)					
		5 or more	<ol style="list-style-type: none"> 1. Keep it up! You are doing a good job following the recommendations of the experts / our doctors and nutritionists. 2. Very good! You are successfully consuming the recommended amount of fruits and vegetables. 3. Fantastic! Make this way of eating a permanent lifestyle habit. 	<ol style="list-style-type: none"> A. If you are looking for some helpful tips on how to keep doing so well. Click here. B. We have got some awesome suggestions for you to keep up this healthy habit. Ready to learn more. Click here. C. If you are interested in receiving some suggestions to keep up your healthy habits, click here. 	<ol style="list-style-type: none"> I. What if you try to consume different coloured fruits and vegetables? II. The colour of the vegetables and fruits is generally associated with antioxidants or substances that better your health (*bioactive compound). III. If you eat a variety of colours, you're guaranteed a good augmentation of antioxidants. IV. Try to consume more whole, fresh, seasonal and local fruit. V. As a snack try eating some raw vegetables (For example: carrot sticks). <p>* Bioactive compound: A type of chemical found in small amounts in plants and certain foods (such as fruits, vegetables, etc). Has actions in the body that may promote good health. It's being studied in the prevention of cancer, heart disease, and other diseases. Examples of bioactive compounds include lycopene, resveratrol, lignan, tannins, and indoles.</p>	(1,6)





		4-1	<ol style="list-style-type: none"> Keep up the good work! You are very close to the recommendations of our experts. With just one more push you will reach the optimal consumption according to our experts. 	<ol style="list-style-type: none"> Do you want to go one step further to reach optimal consumption? Would you like to know how to achieve it? 	<ol style="list-style-type: none"> Try to eat fruits/vegetables every day. Have pieces of fruit at hand. If they're in season even better. Organize your snack times. Increase the number of vegetables in your main meals. It is recommended to consume fruits daily for their contribution in vitamins and minerals, as well as fiber. Vegetables are important sources of micronutrients, dietary fiber, protein and antioxidants. 	(1,7)
		0	<ol style="list-style-type: none"> Are you having trouble You introducing fruit and vegetables into your daily life? Do not reach the minimum recommended consumption of vegetables and fruits. Changing the way we eat can be a challenge. Your consumption of fruit and vegetables is below what is recommended by our experts. We see that you find it difficult to eat fruit and vegetables. 	<ol style="list-style-type: none"> We suggest you try to take them between meals. They can be an easy and convenient snack that will help you get to the next meal less anxiously. Do you dare to try it? Do you feel able to improve your diet? Give yourself the opportunity to do it, starting with a goal you can reach. Do you want us to help you achieve it? 	<ol style="list-style-type: none"> Try to eat one piece of fruit daily. Start by buying the fruits and vegetables that you like. Eating a good salad is much better than just eating lettuce/greens. World Health Organization recommends that people eat a wide variety of vegetables and fruit. People whose diets are rich in vegetables and fruit have a significantly lower risk of obesity, heart disease, stroke, diabetes, and certain types of cancer. Always include vegetables in your meals. 	(1,5,7)

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5.-How many glasses of sugar-sweetened drinks (soda, juice, energy drink) do you usually drink per day?	SUGARY DRINKS 50g/day (10% calory intake, 10 teaspoons per 5g) and 25g/day (5% calory intake, 5 teaspoons of 5g) 1glass 250ml					
		0	<ol style="list-style-type: none"> 1. Awesome! We are glad to hear that you do not consume sugary drinks. 2. Wonderful! We see that you don't drink sugary drinks. 3. Great! You don't drink sugary drinks! 	<ol style="list-style-type: none"> A. Keep up the good work! B. Keep hydrating yourself in a healthy way. C. Water is the ideal drink to keep us healthy! D. Drinking water is the best way to stay hydrated in your daily life 	<ol style="list-style-type: none"> I. It isn't hard for you to remove sugary drinks, you're doing well. II. The World Health Organization defined free sugars, to all the sugars added to foods, drinks and natural sugars in some foods like honey, syrups, fruit juices and fruit juice concentrates. III. What if instead of drinking light (without sugar) drinks you just replace it with water, even if it doesn't have any sugar water is still a lot healthier. -Or if you drink 3 glasses a day, try to drink 2. -Or do you think you could substitute 2 glasses of sugary drinks with 2 of water? IV. World Health Organization recommends a reduced intake of free sugars throughout the life course (strong recommendation). 	(1,8,9)



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		1	<ol style="list-style-type: none"> Not bad. Your consumption of sugary drinks is not excessive but ... 	<ol style="list-style-type: none"> Just keep in mind that this type of drink does not provide any nutritional benefits. Do you dare to eliminate it from your daily life? If you manage to reduce it, so much the better. 	<ol style="list-style-type: none"> Even if with this intake you don't exceed the daily World Health Organization recommendation any other food you take can make you exceed it easily. World Health Organization recommends reducing the intake of free sugars to less than 10% of total energy intake. For example: In the diet of an adult of 2000 kcal, 10% represents a total of 50g/day of free sugars. 	(1,8)
		2	<ol style="list-style-type: none"> We can see that you consume sugary drinks every day. You consume sugary drinks on a daily basis. 	<ol style="list-style-type: none"> Have you considered reducing your consumption? If you like sweet flavours, we offer you alternatives. This is a good time to reduce your consumption. Here are some ideas on how to do it. 	<ol style="list-style-type: none"> A can of 330ml of a soft drink can have 35g of sugar the recommended it's 50g/day. Sports/isotonic drinks are not healthy, choose water instead. If you drink soft drinks, try to decrease the amount each time you do. I can see you like sweets: What if you eat a piece of fruit during the moment of the day you most crave something sweet? For example, in the snack time: eat one of your favourite fruits. Limit intake of sweet and sugary drinks such as fizzy drinks, fruit juices and juice drinks, liquid and power concentrates, flavoured water, energy and sports drinks, ready-to-drink tea and coffee and flavoured milk drinks. 	(1,4)





		3	<ol style="list-style-type: none"> 1. Our experts assess that your consumption of sugary drinks is high. 2. You drink a lot of sugary drinks. 	<ol style="list-style-type: none"> A. It is time to think about reducing it. B. We suggest you reduce it, because of its association with some diseases. 	<ol style="list-style-type: none"> I. Even though juices seem healthy they have too much free sugars try to drink water instead. II. There're drinks that seem healthy but aren't like juices, sports drinks etc. III. Swap at least one drink a day for water. IV. If you have a hard time drinking water, what do you think if you try mixing it with pieces of fresh fruit. V. What do you think if you replace sugary drinks with: water with lemon and cucumber or with orange peel. VI. An option to exchange the sweetened drink can be with aromatic herbs such as watermelon with rosemary, cucumber with marjoram, etc. VII. Sugar intake can be reduced by: Limiting the consumption of food and drinks containing high amounts of sugars (e.g., sugar-sweetened beverages, sugary snacks, and candies). VIII. Eating fresh fruits and raw vegetables as snacks instead of sugary snacks. 	(1,10)
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		4	<ol style="list-style-type: none"> 1. Our experts assess that your consumption of sugary drinks is high. 2. You drink a lot of sugary drinks. 	<ol style="list-style-type: none"> A. It is time to think about reducing it. B. We suggest you reduce it, because of its association with some diseases. 	<ol style="list-style-type: none"> I. Processed drinks like tea, soft drinks, energetic drinks, juices, etc. Can contain a lot of sugar. II. What if you start decreasing the number of unhealthy drinks little by little? III. Replace the juice with a piece of whole fruit it's filling, hydrates, and adds some fibre. IV. If you gradually decrease sweet drinks (sugary drink) for water or sugar-free drinks, your palate will get used to it and you will enjoy fewer sweet foods more. V. Avoid processed drinks because the amount of free sugars (hidden) in one glass exceeds (doubles or triples) the maximum recommended limit. VI. Health problems associated with the consumption of sugary drinks: obesity, type 2 diabetes, cardiovascular disease, etc. 	(1,4,10)
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		5 or more	<ol style="list-style-type: none"> 1. Beware, your consumption of sugary drinks is really excessive. 2. In your daily life there is a very high consumption of sugary drinks. 3. We see that your consumption of sugary drinks is very high. 4. We have noticed that you consume a large amount of sugary drinks on a daily basis. 	<ol style="list-style-type: none"> A. We know you can reduce it if you set your mind to it. Here are some recommendations. B. It is important that you start cutting down, consumption of sugary drinks is associated with the development of diseases. C. It's time to cut down on these drinks. Where could you possibly start? 	<ol style="list-style-type: none"> I. Try to substitute any of these drinks with water. II. If it's too hard to drink water try adding pieces of fruit to it (e.g. watermelon, pineapple, berries, etc.) III. You can also try drinking water with cucumber slices, mint, basil, herbs, etc. IV. Always carry water with you and propose to drink at least 1 litre a day (4 glasses). V. There is increasing concern that intake of free sugars-particularly in the form of sugar-sweetened beverages- increases overall energy intake and may reduce the intake of foods containing more nutritionally adequate calories, leading to an unhealthy diet, weight gain and increased risk of non-communicable diseases. 	(1,8)
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6.-How many times do you usually eat fish and fish products for dinner per week?	<p>Fish Consumption (Report of the Joint FAO/WHO expert consultation on the risks and benefits of fish consumption.(11)</p> <p>Food and agriculture organization of the United Nations, WHO, 2011. (12)</p> <p>Fish with lower methylmercury content are preferred, especially smaller ones. Larger predators accumulate more methylmercury. (11)</p> <p>Eat fish at least 3 times a week, preferably fatty fish like tuna, mackerel, or salmon.(12)</p> <p>Dietary recommendations often advise 1 to 2 servings (130g per serving) of fatty fish (such as herring or salmon) per week, or greater amounts of lean fish, to achieve favorable LC n-3 PUFA intake levels. cardiovascular system.(13)</p>					
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		0	<ol style="list-style-type: none"> You don't consume fish at all. Fish is out of your diet. Fish is not included in your eating habits. 	<ol style="list-style-type: none"> Our experts suggest that you start by introducing it 1 or 2 times a week. According to our experts, not eating fish is associated with cardiovascular diseases. Do you want some ideas to include it? Did you know that you are missing out on an important source of energy, protein and healthy fats? Let us help you consume it. 	<ol style="list-style-type: none"> Not consuming fish increases the risk of mortality from cardiovascular disease in the adult population. Fish is an important source of energy, protein, and essential substances for the body. The consumption of fish guarantees the supply of high-quality animal protein of necessary micronutrients to the organism. Fish, especially fatty (blue) fish, is an important source of essential fatty acids. Fish plays a crucial role in the development of the child and pregnant women. 	(11,14–16)
		1 or 2	<ol style="list-style-type: none"> Keep it up! You are doing a good job following the recommendations of the experts. Very good! You are consuming the recommended amount of fish. Fantastic! Make this way of eating a permanent lifestyle habit. 	<ol style="list-style-type: none"> If you are looking for some helpful tips on how to keep doing so well. Click here. We have some amazing tips for you to keep this healthy habit. If you're ready to learn more. Click here. If you are interested in receiving some suggestions to maintain your healthy habits, click here 	<ol style="list-style-type: none"> Be sure to consume at least one serving of oily (blue) fish. Eating fish, especially oily (blue) fish, reduces the risk of mortality from cardiovascular disease. Fish is an important dietary source of energy, protein and other nutrients. Do you know which fish are fatty fish? Some of them are salmon, trout, mackerel, sardines, herring, etc. Alternate consumption between fatty and lean fish. Fatty fish are rich in omega 3 fatty acids (heart protectors). 	(11,14)



		3 or 4	<ol style="list-style-type: none"> 1. Great! We see that fish is very important in your diet. 2. Very good. ! We see that you consume a lot of fish 3. Great! Your fish consumption falls within the recommendations of our experts. 	<ol style="list-style-type: none"> A. But be sure to vary the type of fish you eat. Here are some ideas from our experts' recommendations. B. What kind of fish is it? We give you some ideas for you to vary. C. As long as you vary the type of fish, it is an option full of advantages. Do you want to know which ones? 	<ol style="list-style-type: none"> I. Frozen fish is a good and generally cheaper option. II. Alternate consumption between oily (blue) fish at least 1/week and lean (white) fish. III. Oily or blue fish are a good source of essential fatty acids. IV. The consumption of fish helps in the neurological development of the child. Promotes brain development, guarantees optimal bone growth, and provides iron and zinc. V. The unsaturated fats found in fish, avocado, nuts and in sunflower, soybean, canola, and olive oils are preferable to the saturated fats found in fatty meat, butter, palm, coconut, cream cheese, ghee etc. 	(11,14,15)
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		5-7	<ol style="list-style-type: none"> 1. You eat fish very often! 2. You love fish! 3. Wow, you eat a lot of fish. 4. We see that you eat a lot of fish. 	<ol style="list-style-type: none"> A. It is certainly a healthy option as long as you vary the type of fish you eat. B. That's fine if you alternate the type of fish you eat. C. Do you usually vary the type of fish you eat? Here are some important recommendations. D. It is important to have both white fish and oily fish in your diet. Do you want to know why? 	<ol style="list-style-type: none"> I. It is recommended that the largest frequency of fish be smaller, such as mackerel, sardines, etc. II. The consumption of fish offers multiple benefits for health and the prevention of some diseases. III. The small fish consumed provide essential nutrients. IV. It is important that you prepare the fish in healthy ways (oven, grill, accompanied with vegetables, etc.) avoiding battered and fried foods. V. Alternate between different types of fish, prefer smaller fish as they will have less of these substances. VI. Fish is not only a source of protein and healthy fats, but also essential nutrients such as omega-3 fatty acids, iodine, vitamin D, and calcium. VII. Although there is a general recommendation to increase the consumption of fish for its multiple benefits, some health risk aspects such as exposure to heavy metals should be considered. 	(11,13,15,16)
7.-How many times do you usually eat red meat (pork, beef, lamb) for dinner per week?	CONSUMPTION OF RED MEAT Red meat refers to lamb, veal, cow, horse, goat and pork.					



		0	<ol style="list-style-type: none"> 1. We see that you do not consume red meat. 2. You do not consume any red meat at all. 3. Your meat consumption falls within the recommendations of experts. 4. Very good! You don't eat red meat. 	<ol style="list-style-type: none"> A. In this case, our experts would like to make a series of very important recommendations. B. This should not be a problem as long as you follow the recommendations of our experts. C. Take note of some suggestions to ensure a complete and balanced diet. D. Click here for some important recommendations from our experts. 	<ol style="list-style-type: none"> I. Good substitutes for red meat can be options of animal origin such as: fish, chicken, eggs, turkey, etc. II. Good options for plant-based protein sources such as: <ul style="list-style-type: none"> -Legumes (beans, chickpeas, lentils, etc.) -Nuts (almonds, hazelnuts, pistachios, other nuts, etc.) III. Make sure the vegetable's protein substitutes are not processed, which could have low nutritional quality fats and a lot of sodium (salt). IV. What about eating the healthiest types of meats and with the less amount of fat when you do decide to eat meat? (fish, poultry, rabbit etc.) V. There are plant-based foods that provide protein such as legumes, cereals, etc. VI. Find protein alternatives including legumes, seeds, and nuts. Also, wholegrain cereals. VII. Substitute meat for fish or other seafood. 	(2)
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		1	<ol style="list-style-type: none"> 1. Very good! We can see that you don't usually abuse red meat. 2. Good! You do not frequently eat red meat! 	A. Keep it up like this! Do you need any idea to achieve it?	<ol style="list-style-type: none"> I. Remove the visible fat from the portion of food you're eating, this way you limit saturated fats and protect your heart. II. Not only is the frequency of red meat consumption important, but the portion size is also important. III. Try to consume small portions and spaced out in time. IV. The consumption of red meat can be 50 grams per day or more than 200g per consumption, which would be a high consumption. Limit frequency and quantity. 	(17)
	The WHO advice it to keep it to a maximum of 2 times a week.	2	<ol style="list-style-type: none"> 1. That's right! 	Try to stay on this line and not increase your consumption. Click here if you want to know more!	<ol style="list-style-type: none"> I. Make healthier choices. II. Change the size of your burger. III. You can occasionally choose a turkey, chicken, fish, or vegetable burger option. (No processed or minimally processed). IV. Boneless skinless chicken breast and turkey cutlets are the leanest poultry choices. 	(2,17)



		3	<ol style="list-style-type: none"> 1. Your red meat consumption is above the recommendations of our experts. 2. You consume red meat in excess. 3. You exceed in the consumption of red meat. 	<ol style="list-style-type: none"> A. We give you some ideas to reduce it. B. Would you like to consume less? Click here. C. Did you know that too much red meat is associated with the development of diseases? We can help you to reduce it! 	<ol style="list-style-type: none"> I. Replace high fat meat with lean meat. II. Choose fish, or White meats like chicken, turkey, rabbit etc.. III. What if you change your meat pie for a chicken or turkey pie. IV. What do you think if you replace a portion of red meat with natural protein sources such as: tempeh, tofu, seitan, cereals such as quinoa, spelt, etc. V. Would it be easy for you if you exchange a day of meat for legumes such as lentils, chickpeas, etc.? VI. An excellent option would be if you substitute a portion of meat for fish (white or blue). Even cheap fish like sardines or mackerel are a very good choice. VII. A very good weekly option is to include cereals (rice, couscous, etc.) with nuts (walnuts, pistachios) and seeds (linseed, pumpkin, etc.) as a main dish. 	(2,4,18)
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		4	<ol style="list-style-type: none"> 1. Your meat consumption is excessive. 2. You consume more red meat than our experts recommend. 3. Be aware that you are exceeding in the consumption of red meat. 	<ol style="list-style-type: none"> A. You may already know that excessive consumption can be harmful to your health. Our experts can help you reduce it. B. You can reduce it! Here are some ideas on how to do it. C. Don't get discouraged, there are ways to reduce it. Give it a try! 	<ol style="list-style-type: none"> I. Remove the visible fat from all types of meats. II. What if you start little by little and you avoid eating meat once a week, on Mondays for example (meatless Monday) and you prep ahead of time by looking up recipes and doing the needed grocery. III. Include nuts and seeds in smaller portions every day. IV. Include both cereals and legumes regularly. V. You can gradually switch to smaller meat portions. VI. In addition to reducing the serving size, avoid cooking at very high temperatures or charred, this increases the health risks. 	(2,18)
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		5 or more	<ol style="list-style-type: none"> 1. There is an excess of red meat consumption in your diet. 2. Your red meat consumption is too high. 3. Your consumption of red meat is higher than our experts recommend. 4. Be careful, the amount of red meat you consume is excessive. 	<ol style="list-style-type: none"> A. Do you know that its excessive consumption is associated with some diseases? We help you to reduce it. B. It is a good time to think about reducing it. Do you want some ideas? C. It is a good time to think about reducing it. Do you want an idea? D. We know that changing eating habits is not easy. Can we help you? 	<ol style="list-style-type: none"> I. Change up one of your casserole or stew recipes by adding more vegetables and legumes and less meat. II. Substitute meat 1 or 2 days a week with rich in omega 3 fish (salmon, mackerel, sardines) III. Prefer or choose white meat like poultry or fish. IV. What if you set a day per week where instead of eating meat you eat a plate of beans or legumes. V. Maybe make little changes like instead of meat lasagne have a vegetable or chicken one. VI. If you're used to eating meat stew what if you alternate it for chicken, fish stew etc. 	(18,19)
8.-How many times do you usually eat processed meat (sausages, hamburgers, meatballs) for dinner per week?	CONSUMPTION OF PROCESSED MEAT Sausages, ham, corned beef, dried meat. And dishes and sauces made with meat.					



		0	<ol style="list-style-type: none"> 1. Awesome! You don't eat processed meat. 2. Great! Processed meat is not a part of your diet. 3. Very good! Processed meat is not in your everyday life! 	<ol style="list-style-type: none"> A. There is no doubt that cutting these foods out of your diet is a good idea. Want to know why? Click here. B. Try to continue in this line, its high salt and fat content make it an undesirable food. C. It is certainly a good way to take care of yourself. 	<ol style="list-style-type: none"> I. The foods in this group may have a good taste and some nutrients but they aren't a good example of healthy foods. II. Most of these foods are high in salt and fats (related to cardiovascular disease) III. Even if you don't eat them much, they're not very healthy so isn't it better if you replace them? IV. Sausages and processed meats are high in sodium and saturated fats. The best thing will be to replace it, for example, with healthy options such as sautéed vegetables, mushrooms, etc. 	(17,20)
		1	<ol style="list-style-type: none"> 1. Keep it up! You are doing a good job following the recommendations of the experts / our doctors and nutritionists. 2. Very good! You are successfully following the recommendations of the experts / our doctors and nutritionists. 3. Fantastic! Make this way of eating a permanent lifestyle habit. 	<ol style="list-style-type: none"> A. If you are looking for some helpful tips on how to keep doing so well. Click here. B. We have got some awesome suggestions for you to keep up this healthy habit. Ready to learn more. Click here. C. If you are interested in receiving some suggestions to keep up your healthy habits, click here. 	<ol style="list-style-type: none"> I. Change the ham or sausages with poultry fillets (turkey, chicken) or rabbit. II. Although you don't reach the limit to consider it inadequate if you avoid it, you will bring benefits to your health. 	(20,21)

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	The WHO advice it to keep it to a maximum of 2 times a week.	2	<ol style="list-style-type: none"> 1. Not bad, you fall within the maximum consumption recommended by our experts. 2. Your consumption of processed meat is within the maximum recommended by our experts. 3. Your consumption of processed meat is at the limit. 	<ol style="list-style-type: none"> A. The main thing now is not to increase it and even, if you can, to reduce it. B. Would you like to reduce it even more? Do you want to know how to do it? C. With just one more push you will achieve optimal consumption. We can help you to achieve it. 	<ol style="list-style-type: none"> I. Sausages even if they're made with chicken and turkey, they are generally high in salt and fat. II. Pay attention to the labels of the processed foods, even if it says vegan or vegetarian, they can be high in salts and fats. III. You don't have to immediately give up your favourite animal foods. Start by cutting back on how often you eat it and eating smaller portions. IV. Substitute processed meats little by little for healthier foods. For example, change bread with sausage for bread with vegetable spread such as hummus. 	(21,22)
		3	<ol style="list-style-type: none"> 1. Wow, your consumption of processed meat is quite considerable. 2. Your meat consumption is above the recommendations of our experts 	<ol style="list-style-type: none"> A. We suggest you reduce it. If you want some ideas to make it easier for you, click here. B. This level of consumption already poses a risk for the development of diseases such as cancer. Would you like to reduce it? 	<ol style="list-style-type: none"> I. Choose smaller portions lower in fat and salt. II. Try change the processed meats for smaller pieces (about the size of your palm) of unprocessed meats or other foods. III. If you like sausages, ham, etc. Save it for very few occasions or better yet replace them with something else you like. 	(2,23)





		4	<ol style="list-style-type: none"> 1. Beware, your frequency of consumption of processed meat is high. 2. We see that you turn to processed meat very often. 3. Our experts rate your processed meat consumption as excessive. 	<p>A. See our recommendations and try to reduce it as soon as you can.</p> <p>B. You can find healthy alternatives to reduce it consumption. Click here!</p>	<ol style="list-style-type: none"> I. If you eat pork sausage, try to make it one with the less amount of fat and add a portion of vegetables to the meal. II. What about including legumes 2-3 times a week as a meat substitute you eat normally. III. You can start trying vegetable origin foods once a week to substitute meat. (eg: tofu, seitan or tempeh. Search for good recipes with these foods) IV. Processed meats have saturated fats (unhealthy) and high amounts of sodium which damage your health. 	(17,24)
		5 or more	<ol style="list-style-type: none"> 1. You consume a lot of processed meat. 2. Your consumption of processed meat is too high. 3. We are concerned about your excessive consumption of processed meat. 	<p>A. Pay attention to our recommendations and try to reduce it as soon as possible.</p> <p>B. This level of consumption is considered a risk by our experts. We can help you to reduce it.</p> <p>C. There are healthy alternatives to reduce your consumption and the risk of some diseases. Are you up for it?</p>	<ol style="list-style-type: none"> I. What about making 1 or 2 days a week free of meat. II. Try to eat smaller than usual portions. III. If you're used to having bacon, sausages etc for breakfast you can replace it with a vegetable puree (chickpea: hummus, eggplant: baba ghanoush, you can also try some of lentils, peppers, etc). Also with tomatoes, mushrooms, avocado etc. IV. You can limit the intake of some foods from these groups and substitute them with other foods you like or even try new ones or healthier recipes. 	(21)
9.-How often do you add extra salt to your food?	ADDITION OF EXTRA SALT TO FOOD Limit salt to less than 5g per day (equivalent to approximately 1 teaspoon).					

D2.7 – Blueprint for the design of the AI preventive system including input and output variables



		Never	<ol style="list-style-type: none"> 1. Awesome! We see that you don't use the salt shaker at the table. 2. Very good! You don't add any more salt to the food on the table. 3. Very good! You don't add extra salt to your food. 	<ol style="list-style-type: none"> A. Click here to know more about the costume of salt. 	<ol style="list-style-type: none"> I. When you select a food to buy it is important that you read the nutritional information to know how much salt it has. Pick the one that has less. II. If you try the food and you feel it needs flavour, try seasoning with herbs, healthy spices or maybe lemon drops. 	(4,7)
		Occasionally	<ol style="list-style-type: none"> 1. We see that the frequency with which you add salt to your food at the table is occasional. 2. Your salt consumption at the table is occasional. 3. You occasionally add salt to your food at the table. 	<ol style="list-style-type: none"> A. Be aware of your salt intake and be aware that other foods you eat, such as processed foods, may also contain salt. B. Be aware of food labelling to see if your salt intake may be excessive. C. Try to remove the salt shaker from the table. Using it increases your salt intake by 10%. D. Remember that excessive salt consumption is linked to the development of some diseases. Be aware of how much you consume. 	<ol style="list-style-type: none"> I. Avoid using the saltshaker at the table, since many foods have too much salt. II. It's always better to consume fresh foods. III. Take a moment to read the labels and choose the foods that have the least sodium. For your health. IV. Using the saltshaker at the table increases the normal intake by a 10%. What if you try to stop this. 	(7,25)





		Often	<ol style="list-style-type: none"> 1. You seem to be overdoing it on salt consumption. 2. Possibly your salt intake is excessive. 3. Be aware that your salt intake may be too high. 	<ol style="list-style-type: none"> A. It is important to be aware of the amount of salt you consume. B. Remove the salt shaker from the table so that you do not use it automatically. C. Using the salt shaker at the table sometimes becomes a habit. D. Remember that salt consumption is linked to the development of some serious diseases. E. Learn to eat with less salt. F. Make it a challenge. We have some ideas for you, click here. 	<ol style="list-style-type: none"> I. That saltshaker is not on your table!! II. Avoid the saltshaker and include more fresh vegetables and fruits. III. Not using the saltshaker at the table doesn't mean you have to eat tasteless foods, there's many spices and herbs you can use. IV. A lot of people consume a lot of through the processed foods they eat, and they don't know it. 	(7,25)
		Always	<ol style="list-style-type: none"> 1. You are overdoing it on salt consumption. 2. Your salt intake is excessive. 3. Be aware, your salt intake is high. 	<ol style="list-style-type: none"> A. It is important to be aware of the amount of salt you consume. B. Remove the salt shaker from the table so that you do not use it automatically. C. Using the salt shaker at the table sometimes becomes a habit. D. Remember that salt consumption is linked to the development of some serious diseases. E. Learn to eat with less salt. Make it a challenge. We have some ideas for you, click here. 	<ol style="list-style-type: none"> I. Stop shaking that saltshaker!! II. Remove the saltshaker from your table and you will be healthier!! III. Nowadays a lot of processed foods have decreased the amount of salt make sure to look for them if you're having one. IV. If you don't shake that saltshaker not only, will you avoid over worrying about your health you can also avoid premature death. V. If you avoid using the saltshaker, read the labels and make better choices you will be bettering your health without even knowing 	(4,7,25)



****NOTE: pending to add a new question (about ultraprocessed food) and its feedback messages**

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Alcohol feedback

Questions/Title	Recommendations from the WHO	Questionnaire responses/range s	Basic message	Guide message	Other recommendations	Bibliography
ALCOHOL	<p>The World Health Organization has now published a statement based in the Lancet Public Health: when it comes to alcohol consumption, there is no safe amount that does not affect health.</p> <p>https://www.who.int/europe/news/item/04-01-2023-no-level-of-alcohol-consumption-is-safe-for-our-health</p>	TOTAL SCORE: 0	<ol style="list-style-type: none"> 1. Great! 2. Very good! 3. Excellent! 4. Fantastic! 5. Awesome! 	<ol style="list-style-type: none"> A. Remember to drink a lot of water every day. B. Here you have other recommendations to continue having a healthy lifestyle and to prevent diseases: sleep enough and eat a balanced diet. 		<ul style="list-style-type: none"> - Global action plan for the prevention and control of NCDs 2013-2020. World Health Organization.2013. https://www.who.int/publications/i/item/9789241506236 - WHO alcohol brief intervention training manual for primary care. World Health Organization. Regional Office for Europe. 2017. https://apps.who.int/iris/handle/10665/346078 - Integrated brief interventions for noncommunicable disease risk factors in primary care: the manual. BRIEF Project. World Health Organization. European Region. 2022. https://www.who.int/europe/publications/i/item/9789289058551



		<p>TOTAL SCORE: 1-4</p> <p>Low risk</p>	<p>1. Your risk of developing diseases related to the consume of alcohol is low.</p>	<p>A. To avoid increasing it, try not to have more than two drinks per day and always make sure to avoid drinking for at least two days a week, even in small amounts</p> <p>B. We suggest you to avoid drinking more than five days per week. Remember that alcohol consumption is related to the development of diseases.</p> <p>C. Keep it up! Try to keep your alcohol consumption below or within the low-risk recommendations.</p> <p>D. Remember that alcohol is totally incompatible with driving, medical conditions that worsen with its consumption, pregnancy or breastfeeding, or if you do not feel capable of controlling it</p>	<p>Did you know that: A glass of wine, a bottle of beer and a glass of spirits all contain approximately the same amount of alcohol? ⁹</p> <p>Drinker's pyramid according to AUDIT score: ⁹</p>	<p>-Brief Intervention. For Hazardous and Harmful Drinking. A manual for Use in Primary Care. World Health Organization. Department of Mental Health and Substance Dependence. 2001.</p> <p>https://www.who.int/publications/i/item/brief-intervention-for-hazardous-and-harmful-drinking-audit</p>
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		TOTAL SCORE: 5-12 Risk	<p>1. It's important that you reduce your alcohol consumption or stop it completely for a while.</p> <p>2. We see that you have a high risk associated with your alcohol consumption. Try to reduce your alcohol intake.</p> <p>3. Your alcohol consumption is above the recommendations of our experts.</p>	<p>A. What do you know about the risks of alcohol?"</p> <p>B. Have you considered reducing it? Here you have some suggestions. Click here.</p> <p>C. Are you having trouble reducing it? Have you experienced any signs of dependence, nausea, morning tremors, or not appearing drunk after consuming large amounts of alcohol? If you answered "yes," click here.</p> <p>D. According to experts, one should not have more than two alcohol drinks per day, and should drink less if they usually feel the effects of one or two drinks. Do you need help to decrease or quit your alcohol consumption?"</p> <p>E. To reduce the risk of developing alcohol dependence, there should be at least two days per week where you do not drink any alcohol. Do you want to decrease your alcohol consumption but don't know how to do it? Click here.</p> <p>F. You should always avoid drinking until you become intoxicated, which can happen with just two or three drinks on</p>	<p>Drink plenty of water every day.</p> <p>Take up new hobbies or spend more time on old ones. Find friends with common hobbies who do not drink alcohol.</p> <p>Establish a daily routine that includes healthy habits and keep a record of them. Limit your drinking. Declare no-drinking days (e.g. Monday, Wednesday, Friday or Sunday).</p> <p>Establish a regular exercise routine (walking, yoga, gym, etc.).</p> <p>Keep active and busy.</p> <p>Drink less. If you usually drink 3 or 4 units when you drink, why not cut down to 1 or 2?</p> <p>Never buy more than you intend to use in one session. Avoid keeping alcohol in the house. 3</p> <p>Check what makes you drink that much. 3</p> <p>Limit your consumption. Indicate the amounts that should not be exceeded. For example: I will not drink more than XX units. 3</p> <p>Drink less. If you usually drink 3 or 4 units when you drink, why not cut down to 1 or 2?</p> <p>Never buy more than you intend to use in one session.</p>	<p>-Brief Intervention. For Hazardous and Harmful Drinking. A manual for Use in Primary Care. World Health Organization. Department of Mental Health and Substance Dependence. 2001. https://www.who.int/publications/i/item/brief-intervention-for-hazardous-and-harmful-drinking-audit</p> <p>-Integrated brief interventions for noncommunicable disease risk factors in primary care: the manual. BRIEF Project. World Health Organization. European Region. 2022. https://www.who.int/europe/publications/i/item/9789289058551</p> <p>-Self-help strategies for cutting down or stopping substance use (ASSIST). World Health Organization. 2010. https://www.who.int/publications/i/item/9789241599405</p>
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				<p>a single occasion. Do you accept the challenge of reducing your consumption? If you can't manage to reduce your consumption, click here.”</p> <p>G. Do you want to reduce the risk of developing some alcohol-related diseases? Substitute your alcoholic drinks for non-alcoholic drinks.</p> <p>H. Many people are able to make changes to their alcohol consumption. Would you like to try it? If you are having a lot of difficulty, click here</p>	<p>Avoid keeping alcohol in the house. 3</p> <p>Check what makes you drink that much. 3</p> <p>Limit your consumption. Indicate the amounts that should not be exceeded. For example: I will not drink more than XX units. 3</p>	
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Important: consider prizes, rewards or incentives when making improvements in behaviours or consumption habits, as well as the presence of an avatar (Gamification, social rankings...).

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