**Service System Design for the Betterment of Italian
Women's Heart Health**

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Product-Service System Design Thesis

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Abstract in English

Cardiovascular disease (CVD) is the leading cause of mortality in many countries, such as Italy, while being largely preventable. Research showed that poor heart health often goes unnoticed due to a lack of risk awareness, delayed symptomatology and the public's difficulty in changing improper lifestyle habits. Italian women especially suffer from CVD at higher rates, an indication of gaps in preventive healthcare measures. To bridge this inconsistency in outcomes, this thesis investigated and leveraged service design to increase equity in heart health care. Using a blended process methodology from service design, human centered design and design thinking, this work gathered secondary and primary research, case studies and participant involvement to understand the problems faced by Italian women. Further synthesis of the research, opportunity discovery and problem framing led to the at-risk target, those with low educational attainment, and the proposition of a service system named Battito. Battito is a medical device lending platform which increases awareness of CVD through the early detection of symptoms, an integrated patient record portal for health tracking and an app promoting preventative lifestyle behaviors among Italian women with low levels of educational attainment. Battito's service proposal outlines how the Italian healthcare system can implement innovative heart health care through a service and digital intervention. Implications of this work are that through Battito's example, the value of service design methods are recognized to address the needs of vulnerable and underserved populations within a healthcare setting and considered for future projects.

Keywords: service design, cardiovascular disease, heart health, Italian women, medical devices, design thinking, low level educational attainment

Abstract in Italian

Le malattie cardiovascolari (CVD) sono la principale causa di mortalità in molti paesi, come l'Italia, pur essendo in gran parte prevenibili. La ricerca ha dimostrato che la cattiva salute del cuore passa spesso inosservata a causa della mancanza di consapevolezza del rischio, della sintomatologia ritardata e della difficoltà del pubblico a cambiare abitudini di vita improprie. Le donne Italiane soffrono in particolare di CVD a livelli più elevati, indicando così una carenza di misure di prevenzione sanitaria. Per colmare questa discrepanza nei risultati, questa tesi ha indagato e fatto leva sul design dei servizi per aumentare l'equità nell'assistenza sanitaria cardiaca. Utilizzando una metodologia di processo misto tra progettazione dei servizi, progettazione human centered e design thinking, questo testo ha raccolto ricerche secondarie e primarie, casi di studio e coinvolgimento dei partecipanti per comprendere i problemi che le donne Italiane si trovano ad affrontare. Un'ulteriore sintesi della ricerca, della scoperta di opportunità e dell'inquadramento dei problemi ha portato al target a rischio, quello con basso livello di istruzione, e alla proposta di un sistema di servizio intitolato Battito. Battito è una piattaforma di prestito di dispositivi medici che aumenta la consapevolezza del CVD attraverso la diagnosi preventiva dei sintomi, un portale integrato di informazione sui pazienti per il monitoraggio della salute e un'applicazione che promuove comportamenti di stile di vita preventivi tra le donne Italiane con basso livello di istruzione. La proposta di servizio di Battito delinea come il sistema sanitario Italiano possa implementare un servizio e un intervento digitale innovativo per la cura della salute del cuore attraverso un servizio e un intervento digitale. Le implicazioni di questo lavoro sono che, attraverso l'esempio di Battito, il valore dei metodi di progettazione dei servizi è riconosciuto per rispondere alle esigenze delle popolazioni vulnerabili e scarsamente servite all'interno di un contesto sanitario e considerato per progetti futuri.

Parole chiave: design dei servizi, malattie cardiovascolari, salute del cuore, donne italiane, dispositivi medici, design thinking

Table of Contents

Table of Figures

Table of Illustrations

1. Introduction

This first section of the thesis outlines the reasons for addressing the topic of heart health, followed by the decision to use Service Design in conjunction with other design methods as a problem-solving framework. Additionally, motivations for the focus on problem solving for at-risk populations (people underserved by current healthcare systems) are expressed. Lastly, personal academic objectives for the research are laid out.

Why Heart Health?

At first glance, the topic of Heart Health (HH) may seem inclined towards a medical solution or a pharmaceutical approach. Indeed, there are a great deal of existing products, treatments and medications that help alleviate symptoms and conditions (Arnett et al., 2019; Gale et al., 2011). Furthermore, HH may seem unimportant or less of a priority compared to other aggressive afflictions such as cancer, tumors or Alzheimer. Medical professionals point out that, "CVD prevention is not given as much recognition by governments, civil society and the public press as diseases that are perceived as more life-threatening" (Reddy et al., 2016, p. 5), a statement supported by the comments in Volgman's work (2019) and Kottke and Horst's studies (2019). These perspectives towards HH have led to some drastic consequences. Currently, cardiovascular related deaths are the leading cause of mortality globally (Kaczorowski et al., 2011) and are the number one cause of death within many nations, such as the United States ("Stepping into Healthier Communities," 2017). Adding onto the issue of mortality, inaction towards poor HH causes significant increased healthcare costs, a drastic reduction in productivity and increased inequality among those affected (Rosengren et al., 2019). These alarming realities illustrate the urgent need for creative thinking and innovative strategies within the field (Teso et al., 2013).

Service Design offers the tools and strategies to confront complex problems such as HH (Patrício et al., 2019). As expressed by Mennini, the need for new approaches and service solutions in healthcare is crucial (2017). Mennini stated, "The importance of thinking of alternative strategies to those proposed so far to reduce mortality, the socio-epidemiological impact, to promote the quality of life of patients and to reduce CVD related costs (both direct and indirect)" (2017, p. 2). Service Design (SD) thinking is equipped to tackle this topic by following a rigorous methodology that considers users, stakeholders and systems in a holistic way. The SD focus on research, empathy and iterative design can provide new opportunities for better HH care (Gibbons, 2017). All these qualities enable service designers to approach the root problem with a critical set of eyes and to propose unexplored ideas.

SD is also critically important as a framework to identify gaps in care within nationalized healthcare systems, identify underserved populations (Teso et al., 2013) and bring to light future challenges in delivering equity of care (Holeman & Kane, 2020). In defining equity within the context of healthcare outcomes, the pursuit is to achieve, "the absence of avoidable, unfair, or remediable differences among groups of people" (World Health Organization [WHO], 2019, p. 40). Striving for equity increases the efficiency of healthcare spending, creates better health outcomes for the population and improves existing systems of care (Damiani et al., 2011). Currently, bridging this gap is a key agenda for many governments, as evidenced by the objective of "the reduction of disparities in performance" (Aspen Institute Italia, 2016). When thinking about the future of HH, the SD approach is instrumental in achieving resilient and thoughtful solutions. By focusing on at-risk individuals and marginalized groups, service design can provide impactful healthcare reform (Altman et al., 2018; Holeman & Kane, 2020).

Given the global impact and severity of heart health, the pressing need for alternative innovative strategies to address both current and future care, the topic is worth examining. Furthermore, the application of SD to achieve equity in care can help illustrate how design methods can be utilized in other contexts to address other forms of disparity.

Objectives of the Thesis

1. Utilize Service Design methods to approach the topic of heart health

The main objective is to apply the methodologies, frameworks and tools within the field of Service Design (which focus on creating or improving services and processes) towards the topic and users affected by HH. Furthermore, the approaches of Design Thinking and Human Centered Design which are interconnected within Service Design will also be leveraged to create a holistic approach

2. Create a service system prototype in the pursuit of increasing equity of outcomes for heart health

Given the need for innovative solutions within the healthcare field, this thesis will outline a proposal for a new service system with the intention of decreasing the present gaps in heart health care for at-risk populations. Tools and visualizations will be used to aid the description of the service design

2. Methodology

As established in the introduction, the challenge of cardiovascular health is both complex and multifaceted (Holeman & Kane, 2020). Unsurprisingly there is not a single solution, but rather a conglomerate of approaches working on different user groups and addressing different needs. Some solutions focus on innovating on hardware technologies, others focus on pharmaceutical approaches and others on legislative and policy making guidelines (Reddy et al., 2016). All these approaches work to tackle cardiovascular health for a diverse set of individuals, at different levels and though different stakeholders. Given the many angles of addressing HH, it is important to use a methodology that balances both the size of the problem and the many variables involved.

As outlined in the objectives, this thesis will focus on innovating for HH care and creating a service system prototype by utilizing a mix of design structures and methods. Service Design offers a well-rounded toolkit to approach complex issues and to combine products, existing systems and user actions into a single solution (Patrício et al., 2019). In conjunction with the SD, the philosophies of Design Thinking (Dam & Siang, n.d.-a) and Human Centered Design (IDEO, 2015) are used to guide the research, problem identification and brainstorming. These other approaches expand upon SD by concentrating on different aspects of the problem, thus guaranteeing a more complete view (Holeman & Kane, 2020). Using this mixed methodology approach supports an inclusive and systems-based approach to the problem of HH. A system approach is one that addresses the problem within the context, by understanding the patterns of experiences, the social cultural context and the institutional processes that are involved (Holeman & Kane, 2020). This process is favorable to a single philosophy of thought (Patrício et al., 2019) as it lends to solutions and ideas that are cognizant of the various variables at play.

Service Design

HH is a complex issue with many variables and components that affect the implementation of a solution. SD thinking is an approach that offers strategies and a robust toolkit to help innovate care for this topic (Patrício et al., 2011; Stickdorn et al., 2018). SD is defined by Nielsen Norman Group as the activity of, "planning and organizing a business's resources, people, props, and processes, in order to directly improve the employee's experience, and to indirectly, the customer's experience" (Gibbons, 2017). Although there are other definitions to SD (Moritz, 2009; Stickdorn et al., 2018) they all reflect a similar perspective of designing steps and processes so that innovation and improvements can be made to an individual's experience.

Expanding upon the definition of people, props and processes, these are all the various components that work together to deliver a service. People are all the actors and participants used to deliver a service, both those visible to the customer and not (Shostack, 1984). These are employees of

the service, third parties and other users involved. Props refer to all the elements that are involved in delivering a service, both physical and digital. These can be interfaces, applications, websites, kiosks, brochures, wayfinding, etc. (Moritz, 2009; Patrício et al., 2011). In terms of processes, these are all the various interactions and intangible steps that go into the successful delivery of a service, such as the retrieval of health records from a computer system or a nurse sharing a document with a doctor and conversing about a patient (Patrício et al., 2011).

SD thinking is a useful framework for HH as the analytical focus through mapping of systems can uncover potential gaps and conflicts within the delivery of heart prevention and care (Teso et al., 2013). SD starts with understanding all the individuals involved in a system (Patrício et al., 2019). In the example of health, this is the analysis of patients, employees, families, caregivers, medical professionals and partners to name a few (Teso et al., 2013).

SD is beneficial as a framework as the methodology allows for new thinking within traditional systems. A practical example is the cost in delivering care. If simply looking at a business-based perspective on delivering a health service, existing models will likely be unsustainable (Raghu et al., 2015). SD thinking can be a tool for businesses to become leaner and more efficient (Moritz, 2009). Moreover, SD also considers the success of the implementation not only with profit metrics but with user satisfaction, the stakeholder's ease of use, longevity of the project and other qualitative metrics (Gibbons, 2017; Patrício et al., 2011).

Another contribution of SD thinking is the elimination of excess and waste (Moritz, 2009). When mapping out the existing context and interaction, SD can find potential inefficiencies in the system, which in healthcare equate to wasted funds or lack of care. Likewise, these overlapping systems cause frustration and confusion which diminish the original effectiveness of the service (Gibbons, 2017; Shostack, 1984). SD works with users to have a clear understanding of the problem. This often leads to difficult conversations and challenging assumptions of existing models as testing the current solutions can be beneficial in exposing gaps and problems (Patrício et al., 2011).

By directly talking with involved users, SD thinking can empathize deeply and understand where a service solution can best be implemented (Gibbons, 2017). Since SD works across disciplines and partners and strives to find a singular journey for a target individual, this methodology of thinking helps align organizations and efforts towards a common goal (IBM Studios, 2018). As an example, in healthcare, this might include the interaction of device manufacturers with local policymakers and with health volunteers (Teso et al., 2013).

An outcome of the SD thinking includes the creation of a service blueprint, a system map, a business model canvas, an offering map and other diagrams ([Service Design Tools], n.d.). These tools and their contribution are discussed in chapter 9 and are visible in Appendix A.

In résumé, SD thinking provides the skillset and knowledge to navigate complex issues efficiently. Although SD offers many tools and methods to surface conflicts, address gaps in existing systems and innovate on traditional models, the need for additional methods will provide a more holistic approach when designing for HH and will raise other opportunities and insights.

Design Thinking

The basic philosophical premise of Design Thinking is to approach complex issues with an adaptable, iterative framework. The Stanford d.School was one of the first educational institutions to popularize and define the process (IDEO, 2015). IDEO, a global design company, has become one of the early adopters of this framework of thinking and has defined much of the process and methods explored throughout this thesis (IBM Studios, 2018; IDEO, 2015). There are two commonly used diagrams that illustrate the process. The double diamond diagram (Heffernan, 2019) and the five steps process (Dam & Siang, n.d.-a).

Figure 1. Double Diamond Diagram
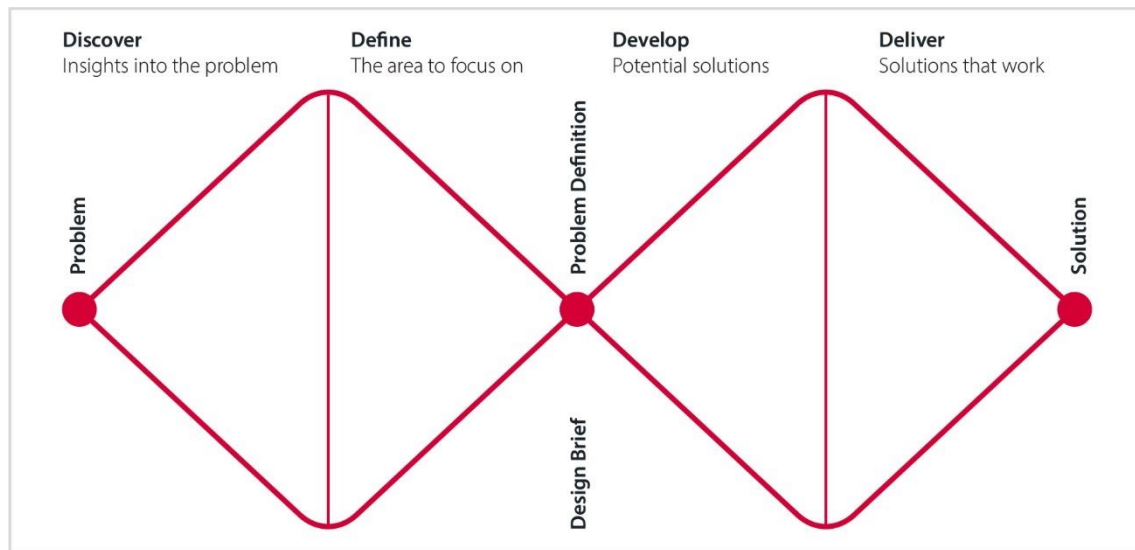
Note: Figure 1 is graphically adopted Heffernan, 2019.

The double diamond, Figure 1, shows at a high level the converging and diverging thought methodology, which shifts the designers focus throughout the process. *Convergent thinking* is defined as having a narrow view and being concentrated on a singular issue, whereas *divergent thinking* is a broader inquiry and exploration, considering alternate options (Heffernan, 2019; Stickdorn et al., 2018).

The double diamond is broken up into discovery, definition and development and delivery (Heffernan, 2019). In the discovery stage, the focus is to open up the original problem and inquiry to understand the particular context that is being designed for, which includes both secondary research and in person interviews (IBM Studios, 2018; Heffernan, 2019). In the definition stage, a designer will be selective and begin to focus on discovered needs through synthesis of the data. These needs are translated into challenges and problems that might be different from the original starting point. During the development phase, designers are once again diverging in the search of inspiration and to generate ideas. This process helps to consider a variety of solutions, case studies, and approaches to find innovations that have been overlooked. Lastly, the delivery phase is focused on prototyping solutions and implementation (IBM Studios, 2018; Heffernan, 2019).

The five step diagram seen in Figure 2, as described by Holeman and Kane, is similar to the double diamond but clarifies further the individual sections within the DT process (2019). These are: empathize, define, ideate, prototype and test. The first step is traditionally regarded as customer research but with an emphasis of discovering the customers desires and needs through empathy. The second step focuses on translating the discovered needs into product or service requirements. The third step is focused on brainstorming and confronting the problem. Prototyping involves low fidelity mockups of the solution for feedback. Finally, testing involves a pilot implementation of the solution. Unlike the double diagram, the five step diagram does not discuss convergent or divergent thinking and focuses more on a fluid, nonlinear process where insights and feedback are integrated back into the DT method.

Summarizing the DT process, Altman et al.'s diagram seen in Figure 3, illustrates a combination in a single graphic (2018). The graphic explains key aspects of the DT methodology. Starting with the needs, designers work to empathize with the individuals, communities and target they wish to help. This empathy and understanding can be done through a variety of tools such as secondary research, interviews, surveys, shadowing, focus groups and co-designing. *Empathy* is the process by which designers envision themselves as the user to feel and notice unseen details (Dam & Siang, n.d.-b; IDEO,

2015). During this process, designers question assumptions, look for specific needs and uncover problems. After identifying areas of action, the process focuses on ideation. In this stage, DT offers a vast number of activities to spurn ideas and creative concepts. Through a filtering and selective process these ideas are quickly mocked up in what is typically known as an MVP, or minimum variable product, and tested with the user. Feedback and performance of the solution creates a new set of needs and challenges that loop into the process. Meeting the need is usually best defined by achieving a defined key performance indicator.

Figure 2. Five Step Process
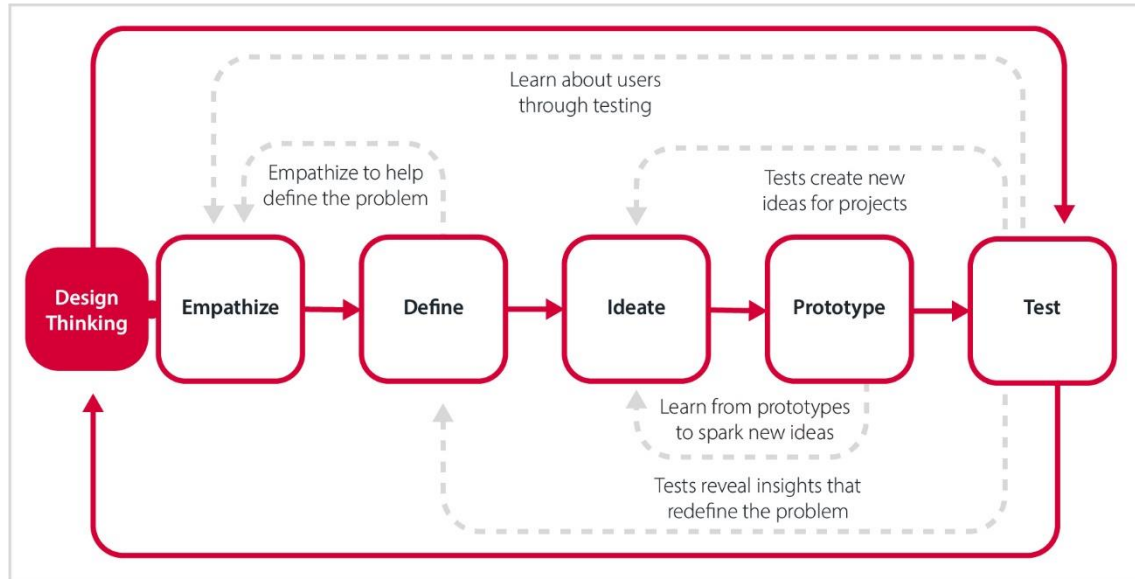
Note: Figure 2 is graphically adapted from Holeman and Kane, 2019, p. 484

Figure 3. Design Thinking Diagram
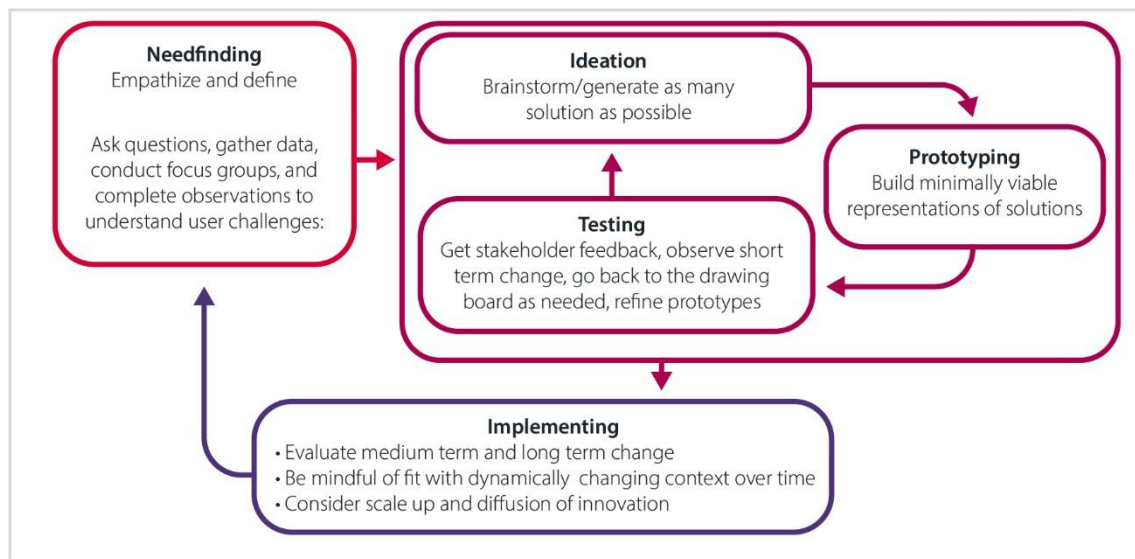
Note: Figure 3 is graphically adapted from Altman et al., 2018, p. 2

Drawbacks of the DT method included the lack of focus on environmental and cultural context (Dam & Siang, n.d.-b). Another issue with using the DT methodology is the inflexibility in the process. The double diagram or the five process diagram, Figure 2 and 3, are all circular processes, limiting the amount of revisioning and re-evaluation with users until the prototype stage (Dam & Siang, n.d.-b). Lastly, DT aims at solving current user needs and not to speculate on possible futures (Dam & Siang, n.d.-b). Such a restriction impairs the envisioning of new systems to instead focus on immediate needs.

In summation, DT adds to SD a more structured process for research, ideation and prototyping. In particular, the importance of using DT in healthcare is crucial when trying to make innovative changes in the process and products. The DT process is built joining disparate insights into a workable new concept, improving the performance of healthcare solutions. Likewise, the DT process of early prototyping and testing of a solution results in less financial and time investment than traditional methods. Altmen et al. research gives a summarized account for the usage of DT for healthcare stating:

> Health care systems require continuous innovation...However, these stakeholders are not always considered...which results in products that remain unused because they do not account for human context, need, or fallibility...design thinking offers a way to close that gap by helping investigators incorporate user needs and feedback throughout the development process" (2018, p. 1).

Human Centered Design

Since SD has an adaptable framework for problem solving, other design philosophies such as DT are useful for creating a structure to the process when designing for the healthcare context. However as mentioned prior, DT has some limitations (Dam & Siang, n.d.-b). As such, employing Human Centered Design (HCD) can compensate for these shortcomings and provide alternative perspectives on problem solving. HCD is a mindset that focuses on involving real users (as opposed to just personas) throughout the design process with the end goal of creating ideas with a valuable benefit (IDEO, 2015). The philosophy can be best represented by Figure 5, with the overlap of viability, desirability and feasibility. Figure 5 shows how the human empathetic approach needs to work in conjunction to other dimensions in order to be a successful proposal. HCD defines *empathy* as a designer's understanding and relation to a user's problems, needs, goals, emotions and behavior (IBM Studios, 2018; IDEO, 2015). Holeman and Kane discuss the benefits of HCD methods stating, "supporting cooperative activity and augmenting people's skills, rather than using technology primarily for purposes of efficiency or managerial control; and concern for the whole person and their life experiences" (2020, p. 491). HCD follows a similar diverging and converging process to DT but is less linear in the steps. Visualizing this HCD method, IDEO created a framework of inspiration, ideation and implementation seen in Figure 4 (2015). The inspiration phase of design is all about empathizing and understanding undiscovered needs, opportunities and challenges for users. Ideation phase works with the users to co-create products and services that go beyond expectation. The last phase of implementation focuses on testing and receiving feedback on the solution. Using this HCD is useful when designing for healthcare given the collaborative information exchange during the design process. Holeman and Kane discuss this point, "Participation is a touchstone for those who associate the term human-centered with engaging stakeholders as partners, rather than viewing designers as experts and potential users as mere informants" (2020, p. 489). A benefit to this approach for healthcare innovation is the increased empathy for the target, whereby the solution is a collaborative effort rather than a single designer's vision (IBM Studios, 2018). HCD is a useful methodology when designing for healthcare as the process yields a blended solution from these joined stakeholder perspectives, thus creating an unexpected and effective problem solving (IBM Studios, 2018).

Figure 4. IDEO Process
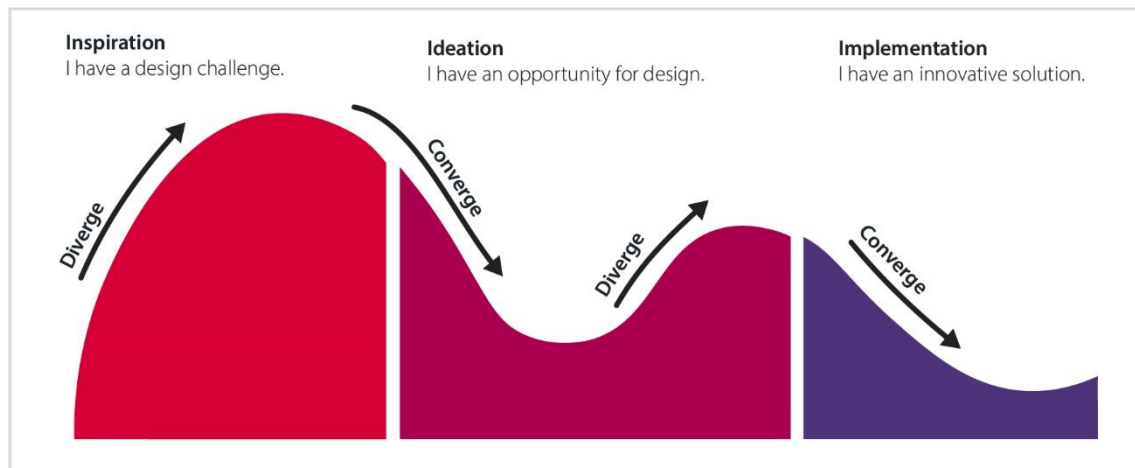
Note: Figure 4 is graphically adapted from IDEO, 2015, p. 13

Figure 5. Innovation Diagram
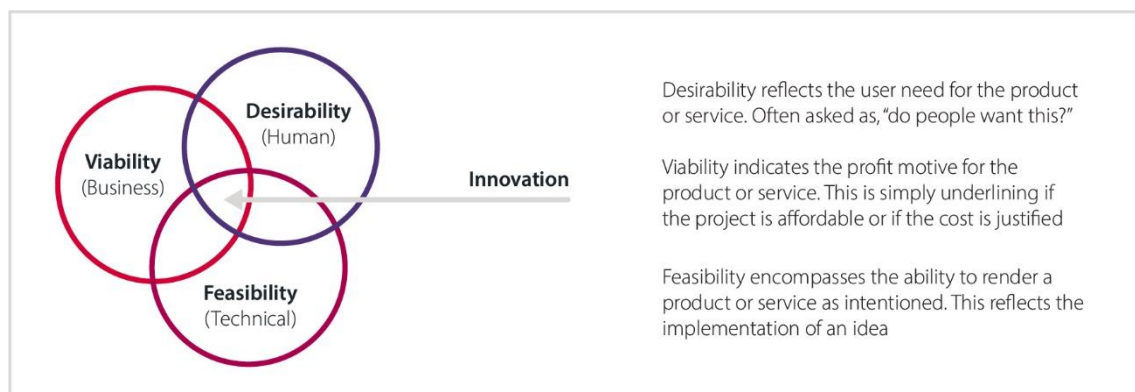
Note: Figure 5 is graphically adapted from IDEO, 2015, p. 14

In summary, the methods from SD, DT and HCD together offer many angles for the understanding of HH. Using SD thinking helps to understand the people, props and processes involved in a specific context SD also helps to navigate complex issues efficiently using tools crafted to surface conflicts, address gaps in existing healthcare systems and rethink traditional models of HH care. In contrast, DT proposed a structured circular methodology for the process of designing a HH solution, in addition to insights on rapid prototyping and gathering insights from stakeholders involved. HCD contributed with a focus on user needs, benefits and the practicality of solutions. The combination of these methods creates the ideal framework to problem solve for the issue of HH. Throughout the research, these methods will be referenced to guide the process, the user involvement and the design considerations.

3. Secondary Research

Following the DT and HCD process of empathizing and needfinding, as described in Figures 2, 3 and 4, research about heart health started with scientific literature, articles and statistics. The objective of the secondary research is to begin identifying needs, gaps and challenges in the delivery of heart health care (IDEO, 2015; Moritz, 2009). This exploratory research is a valuable tool in understanding, at a high level, the existing context for a topic and to gather all relevant information (Stickdorn et al., 2018). By laying a foundation of knowledge, the subsequent empathizing through interviews with subject matter experts and users is focused on relevant problems (Patrício et al., 2019). This broad understanding helps contextualize ideas when crafting a considered SD system.

Defining Heart Health

In order to create an effective service system for heart health, an underlying foundation of understanding, metrics and definitions is required. This begins with an understanding of heart health: Heart Health (HH) refers to being conscious of heart positive behaviors, understanding risks, making healthy choices and taking steps towards the reduction of heart related diseases (WHO, 2017). This includes preventive medical visits, taking body measurements regularly, routine exercise, understanding typical symptoms and eating a nutritious diet (Lichtenstein et al., 2006). All this greatly reduces the chances of developing cardiovascular diseases. *Cardiovascular diseases*, often abbreviated as CVD or CVH (cardiovascular health) is an umbrella term that as defined by Pinckard et al. as:

> Encompasses a wide range of conditions that affect the heart and vasculature including arrhythmias, dilated, hypertrophic, or idiopathic cardiomyopathies, heart failure and atherosclerosis. These conditions can lead to potentially fatal cardiac events such as stroke, myocardial infarction (heart attack), or cardiac arrest (2019, p. 2).

Other scientific sources use the label CVD to include a variety of health problems, such as the WHO which defines CVD as a catch-all term referring to a series of conditions such as: "Coronary heart disease – disease of the blood vessels supplying the heart muscle; cerebrovascular disease – disease of the blood vessels supplying the brain; peripheral arterial disease – disease of blood vessels supplying the arms and legs; rheumatic heart disease..."(2017, para.1). This research will utilize the abbreviation CVD to refer to any of the conditions and diseases that are indicative of one's heart health. Using the risk of CVD, given the definition, can be indicative of an individual's HH.

As defined, HH is affected by numerable behaviors, the understanding of risk and the mitigation of those risks. There are several lifestyle factors that have been studied to directly influence the risk of CVD. Figure 6 will be helpful in guiding the secondary research and recognizing the modifiable behavioral factors (2016). When looking at service system approaches to tackle HH, the focus should be on preventative approaches and interventions that help people delay or mitigate their risk of CVD. Unfortunately, genetic and incurable heart and cardiovascular conditions are impossible to treat despite lifestyle changes and as such are not considered as part of the secondary research (Tillmann et al., 2017). While SD can certainly be useful in creating services to help individuals cope with present problems, the objective of the thesis is focused on addressing gaps in outcomes existing in the healthcare system. Those individuals whose outcomes will not change are outside of the scope of this work. Patrício et al. supports this decision given that service system solutions consider the existing context and can innovate on, "different levels of service systems" (2011, p. 182).

Broken up into five stages, Figure 6 displays how the progression of CVD affects the type of service prevention that can be implemented. The column to the far left indicates population health interventions, which can range from policy, to products and services depending on the type of risk. The pathway definitions refer to the steps in an individual's journey if HH goes unchecked. As seen, primary prevention and early management of CVD all present opportunities for innovative service systems.

Figure 6. Policy Priorities for Heart Health
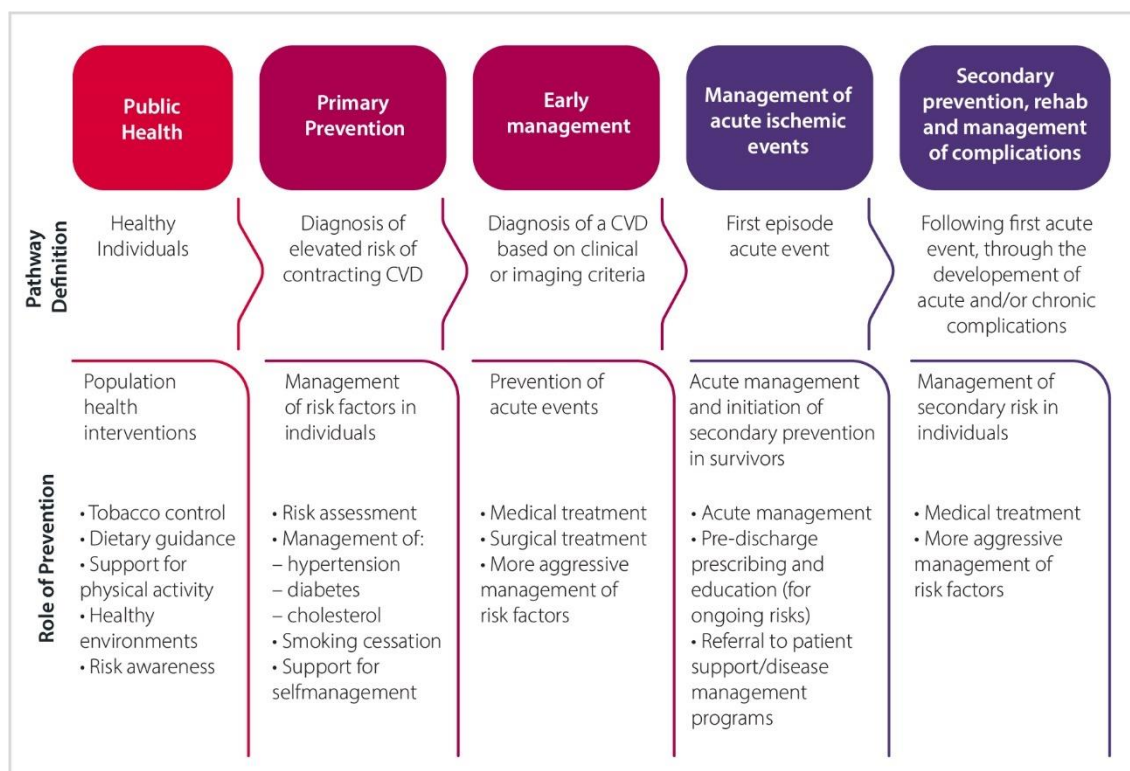
Note. Figure 6 is graphically adapted from Reddy et al., 2016 p. 13

        Although changing lifestyles and behaviors is a daunting task, service design can offer solutions and strategies to improve the process. Currently medical advancements have increased the ability to monitor, measure and cope with underlying problems. However, this overlooks the lifestyle component and leads, as seen in Figure 6, to most preventative measures being focused on the management or medical treatment of existing conditions. This is because, as expressed by Reddy et al., "There is a lack of urgency. Because this epidemic develops slowly and seemingly inevitably, it does not create the panic-driven response...health professionals and politicians tend to focus on immediate problems, while prevention policies can seem distant and abstract" (2016, p. 11). This highlights the need for SD within lifestyle preventions and supports the objectives of the work.

        In summary, HH was defined as a combination of understanding of risks, making healthy choices and taking steps towards the reduction of heart related diseases. In making healthy choices, modifiable preventative behaviors were evidenced, such as proper physical activity, eating a correct diet and management of stress (WHO, 2017). In the following section, the main contributors will be highlighted and discussed. While there are many more variables that affect CVD, those mentioned are key to understanding the majority of problems related to HH (Avanzini et al., 2016) and in establishing a foundation of knowledge for SD ideation.

Lifestyle factors affecting heart health

        When defining HH there are several controllable choices that can affect a person's livelihood and risk of developing CVD. As mentioned prior, research has indicated that altering these behaviors is a promising way to intervene with a service solution (Mozaffarian, 2016; Lichtenstein et al., 2006; Kaczorowski et al., 2011). As seen in Figure 6, there are numerous ways lifestyle can affect the risk of CVD. In the early stages, lifestyle protective measures can control diet, physical exercise, social

influences and the awareness of risk. Even once diagnosed with CVD, lifestyle can still drastically alter outcomes by creating a management plan and strategy to better health (Kaczorowski et al., 2011). Studies have shown that the impact of lifestyle changes can yield enormous benefits to HH. As an example, Reddy et al. synthesized information and expressed that:

> WHO and WHF assessed the relative potential contribution of different prevention CVD measures and identified the three priority areas that they think have the greatest potential for impact over the next decade that will together capture around 80 percent of the current morbidity and mortality burden...1. Hypertension (high blood pressure) diagnosis and treatment 2. Tobacco control 3. Secondary prevention (2016, p.11)

In referring to secondary prevention, the term refers to approaches that reduce and delay the risk of CVD, which includes lifestyle interventions, medical treatment and counseling. Since hypertension is the largest of the factors, further research shown in Figure 7 indicates how treatment can include lifestyle interventions. The approaches shown are, "Non-pharmacological interventions are recommended for all adults with elevated blood pressure or hypertension" (Arnett et al., 2019, p. 179), which relate to the concept of lifestyle management. Further supporting this point, Avanzini et al, indicated the greatest reduction in CVD through, "the control of six out of seven major modifiable risk factors significantly improved in a few years. (Smoking, Physical Activity, Diet, Body Mass, Cholesterol, Blood Glucose and Systolic pressure)" (2016, p. 2), which iterates lifestyle approaches in the control of those factors.

Recapitulating, population health management as seen in Figure 6, the treatment of hypertension through lifestyle interventions and the management of modifiable risk factors as expressed in Figure 7, all indicate SD challenges in the delivery of HH care. In the next section, the individual components such as diet, physical activity and mental stress will be evaluated.

Figure 7. AHA Approach to CVD

Best Proven Nonpharmacological Interventions for Prevention and Treatment of Hypertension		
	Nonpharmacological Intervention	**Goal**
Weight Loss	Weight/body fat	• Best goal is ideal body weight, but aim for at least a 1-kg reduction in body weight for most adults who are overweight
Healthy Diet	DASH dietary pattern	• Consume a diet rich in fruits, vegetables, wholegrains, and low-fat dairy products, with reducedcontent of saturated and total fat
Reduce intake of dietary sodium	Dietary sodium	• Optimal goal is<1500 mg/d, but aim for at least a1000-mg/d reduction in most adults.
Enhanced intake of dietary potassium	Dietary potassium	• Aim for 3500–5000 mg/d, preferably byconsumption of a diet rich in potassium.
Physical activity	Aerobic	• 90–150 min/wkn • 65%–75% heart rate reserve
	Dynamic resistance	• 90–150 min/wkn • 50%–80% 1 rep maximumn • 6 exercises, 3 sets/exercise, 10 repetitions/se
	Isometric resistance	• 4 x 2 min (hand grip), 1 min rest between exercises, 30%–40% maximum voluntary contraction, 3 sessions/wkn • 8–10 wk
Moderation in alcohol intake	Alchohol consumption	In individuals who drink alcohol, reduce alcohol to: • Men: less than or equal to 2drinks daily • Women: less than or equal to 1drink daily

Note: Figure 7 is graphically adapted and modified for simplicity from Arnett et al., 2019, p. 201

Diet. Balanced nutrition, portion sizing, food quality and eating patterns all define diet. Proper diet is one of the most prominent examples of lifestyle choices that affect the risk of CVD. Diet is a key lifestyle factor as it helps our body maintain proper, "blood lipids, glycemic control indices, inflammatory and coagulation markers, and blood pressure levels" (Panagiotakos et al., 2006, p. 75). These components determine and reflect on HH, as described in Figure 7. Although proper eating is important, there is a researched disconnect between what people should be eating and what they eat. Explanations for this disconnect include misinformation, convenience, social habits and cultural context (Benedetti et al., 2016). This gap between knowledge and action is critically important as it composes a preventative behavior that could be changed though SD for HH. Proper eating is so essential to the risk of CVD, that if fruit and vegetable serving guidelines were followed by the public, there could be a reduction of premature deaths of, "710,000 coronary heart disease deaths, 1.47 million stroke deaths, 560,000 cancer deaths and 5.4 million premature deaths attributable to a fruit and vegetable intake below 500 g/day" (Aune et al., 2017, p. 1047) globally, per year. On the individual level, Aune et al. reports that:

> There was a 8–16% reduction in the RR [relative risks] of coronary heart disease, 13–18% reduction in the RR of stroke, 8–13% reduction in the RR of cardiovascular disease...mortality for each 200 g/day increment in intake of fruit, vegetables, and fruit and vegetables combined (2017, p. 1047)

The study indicates that even small dietary changes can greatly affect a person's HH. This finding, in conjunction with other studies, support the AHA endorsement that individuals should eat a variety of fruit and vegetable servings every day, as indicated in the DASH diet seen in Figure 7. Examples include spinach, carrots, peaches, and berries. (Lichtenstein et al., 2006; Eckel et al., 2014). Further recommendations include:

- Eat a variety of grain products every day. Include whole-grain foods that have lots of fiber and nutrients. Examples of whole grains include oats, whole wheat bread, and brown rice.
- Eat fish at least 2 times each week. Oily fish, which contain omega-3 fatty acids, are best for your heart. These fish include tuna, salmon, mackerel, lake trout, herring, and sardines.
- Eat foods low in saturated fat and trans fat (Eckel et al., 2014, p.82)

Continuing the recommendations, similar to the DASH diet, the AHA also promotes the Mediterranean [MED] diet for its protective and helpful role in the management of hypertension and the risk of CVD. As supported by Grosso et al., "the protective effects of the diet appear to be most attributable to olive oil, fruits, vegetables, and legumes. An average reduced risk of 40% for the aforementioned outcomes" (2017, p. 3218). This research suggests that increasing adherence to the foods consumed in the MED diet can be considered as a CVD lifestyle management tool. Grosso et al, investigated this association and results showed that, "highly adherent individuals had lower CVD morbidity and mortality with a decreased risk of about 30%" (Grosso et al., 2017, p. 3227). However, more contemporary research has concluded that, "The most important thing is to focus on the overall quality of your diet, rather than single nutrients or foods" (AHA, 2020, para. 5). As such, increasing adherence to the MED diet is important but the focus should not be on the integration of a single ingredient but on achieving better eating habits.

In summation, the practical implications from this research indicate that imposing a guideline and education on the MED diet is crucial when trying to alter modifiable behavioral factors for CVD. In conjunction with an increase in fruits and vegetables, following these guidelines can yield significant improvements in individuals HH. The current gap in adherence can be explained by several factors such as age, gender, life-style variables such as smoking, socio-economic characteristics and education (Benedetti et al., 2016). Understanding these variables will help in creating a service system that encourages dietary adherence; however, the SD approach should be "culturally sensitive and should encourage healthy preparation of traditional ethnic foods" (Lichtenstein et al., 2006, p. 91).

Physical Activity. An important controllable behavioral factor that greatly determines the risk of CVD and overall health is physical activity. This is supported by the preventative behaviors prior discussed in Figures 6 and 7. The amount of physical activity and the type of exercise specifically influence HH (Wahid et al., 2016). Although this factor is widely understood, evidenced later in the primary research, see Survey 1 and 2 in Appendix B, there is a disconnect between knowledge and action (Sanders et al., 2020). This gap is caused by a variety of factors such as physical discomfort, misinformation, environmental context, social context, psychological resignation and lack of time (Musumeci, 2016; WHO, 2019). Currently, research from Nes et al. indicates that "Low levels of physical activity have reached pandemic proportions, contributing to >5 million deaths each year worldwide" (2017, p.328). This data suggests there is a problem with how physical activity is prioritized at a policy level and illustrates the potential for SD thinking to promote preventive actions. Physical activity is an important lifestyle factor, as Mesumeci highlights:

> Daily moving has positive effects on the physical and mental health of any person...improves glucose tolerance and reduces the risk of type 2 diabetes...prevents hypercholesterolemia and hypertension and reduces the levels of blood pressure and cholesterol…decreases the risk of developing heart disease...reduces the risk of premature death (2016, p. 270).

This study provides evidence that physical activity acts as a protective barrier to CVD and provides additional health benefits. Other studies have further evidenced that physical activity affects the risk of CVD through a variety of physiological factors, "exercise can improve metabolic and cardiovascular health independent of changes in body weight, including improved glucose homeostasis, endothelial function, blood pressure, and HDL levels" (Pinckard et al., 2019, p.3). This research indicates how any exercise can be beneficial irrespective of weight, meaning that exercise can be started at any point. This supports why the AHA and other organizations repeatedly instill physical activity as a recommendation (Arnett et al., 2019). As such, using SD thinking to encourage, rethink and inform about physical activity can be beneficial given the large-scale impact and need.

Exploring the modern problem of low levels of physical activity through the lens of SD, one can observe how policymakers and institutions are currently communicating exercise guidelines. This understanding can help uncover potential gaps, an important process in the initial discovery phase (Moritz, 2009). Nes et al. evidenced potential misinformation in public health policy stating:

> Goals such as "10,000 steps per day" or 30 minutes of activity per day tend to be vague and misleading, as they do not reflect the body's response to each activity. The most personalized, accurate way to track and measure the body's response to activity is through monitoring a person's heart rate (2017, p.329).

Given this fact, policy decisions and suggestions on exercise require a tailored individual approach. Nes et al. further expands that updated research guidelines now indicate, "that adults should engage in at least 150 minutes of moderate-intensity activity or 75 minutes of vigorous intensity activity per week, or any combination of activity that approximates the same total energy expenditure" (2017, p. 328). This adaptive metric offers a clearer guideline for individuals, however there is still a need for adherence to this new recommendation.

So far, the contribution of physical activity to various health markers has been mapped. Quantifying this association, a large study from the AHA aimed to measure how much physical activity benefits individuals, "an increase in 11.25 MET [metabolic equivalent of task] h/week for an inactive individual is associated with a reduction of risk for cardiovascular mortality by 23%" (Wahid et al., 2016, p. 8). This study suggests that if sedentary individuals begin exercising regularly, they can drastically alter their HH; reflecting the earlier research that any exercise, at any point, is positive (Pinckard et al., 2019).

Physical activity is so crucial to HH that successful implementation can be considered as a treatment for existing and developing conditions (Arnett et al., 2019). "Often, the practice of physical activity is at least as effective as drugs in not only the prevention, but also the treatment of several diseases such as heart failure" (Musumeci, 2016, p. 273).

In summation, although physical activity is a controllable behavioral factor with a high correlation to the risk of CVD and death, many people fail to implement the correct amounts of exercise required to maintain a healthy lifestyle (Pinckard et al., 2019). Furthermore, there is a clear gap between the benefits of physical exercise and those who need to exercise. By understanding this association, SD can be used to design interventions, assist in the implementation of routines, increase motivation and in tailoring physical activity, iterating the suggestions in Figures 6 and 7.

Mental Health (Stress). Increasingly, a lifestyle factor that has gained attention in population health interventions for CVD is the management of stress (Arnett et al., 2019; WHO, 2019). The WHO has stated that, "Mental health is a major public health priority because of its co-morbidity rates with cardiovascular disease (CVD)" (2019, p. xxi) and as such should be investigated as a risk factor when designing a SD system solution. In particular, the effects of chronic stress as well as high stress exposure affect the rates of CVD for individuals. This is expressed in Figure 6's healthy environment and the support for self-management. Research from Albert et al. found that, "high and active job strain/stress was associated with heightened CVD risk" (2017, p. 9) confirming that there is a correlation between the contextual environment, the personal experience and HH. Furthermore, as evidenced in the research from Dar et al., "chronic stress and stress conditions is rapidly increasing in the modern world, the identification of stress as an independent risk factor for CVD and the development of novel preventive strategies have emerged as public health challenges needing urgent attention" (2019, p. 23). Understanding how stress affects HH is important when designing service interventions. An important study that followed "middle aged and older women, a population that remains relatively under-represented in prospective evaluations of stressful life experiences" (Albert et al., 2017, p. 10), linked stress with increased CVD. A summarized graphic of the findings, Figure 8, illustrates how various health markers are subject to stress and result in poor HH.

Figure 8. Stress and CVD
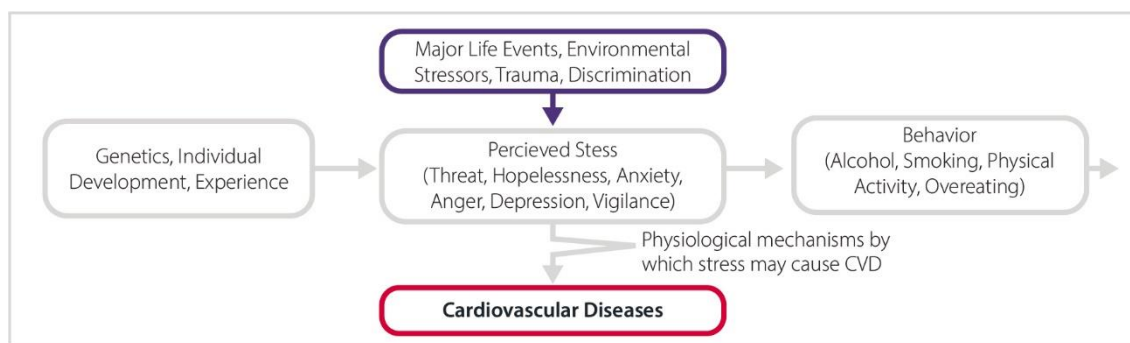
Note: Figure 8 is graphically adapted and summarized from Albert et al., 2017, p. 2

When thinking about SD and stress, Dar et al. discusses various non-pharmacological interventions that could involve innovative approaches (2019) (Reddy et al., 2016). As an example, Dar et al. mentions possible interventions such as mindfulness-based stress reduction, the usage of meditation, and cognitive behavioral therapy for individuals at risk (2019). Furthermore, research also indicates that successful stress reduction can be achieved through "other therapies (e.g., pharmacological, education, exercise)" (Dar et al., 2019, p. 23). In pointing the effectiveness of stress management to the decrease of CVD, Dar et al. discuss a case study, where this non-pharmacological treatment resulted in a comparable reduction to the risk of CVD as tobacco cessation (2019). Besides those at risk, stress management was demonstrated to reduce blood pressure in untreated subjects with hypertension (Dar et al., 2019). The research not only establishes the link between stress and CVD but highlights how SD can be used to craft an effective intervention approach through lifestyle interventions (WHO, 2019).

Other factors affecting heart health

When defining the lifestyle factors that could be modifiable by behavior, alcohol and tobacco were categorized separately in this research, given that they don't necessarily apply to all individuals, whereas diet, physical activity and mental health do (Eckel et al., 2014; WHO, 2017). However, it is important to note that institutions such as the AHA categorize tobacco and alcohol as modifiable behavioral factors as seen in Figure 7 (Arnett et al., 2019). Considering the potential for abuse and the special circumstances that surround these substances, the discretion was made to keep these factors separate as they require an altered SD approach than what would entail in lifestyle recommendations such as diet and physical exercise (Avanzini et al., 2016). The purpose of this section is to understand their relation to HH and to consider their impact in the implementation of a service solution that promotes equity of outcomes.

Alcohol. Drinking alcoholic substances has a controversial effect on CVD risk and overall HH (Arnett et al., 2019; Reddy et al., 2016). Some past studies have indicated that moderation when drinking as an acceptable (Djoussé et al., 2009; Grosso et al., 2014; WHO, 2017) habit while other findings indicate the contrary (Fernández-Solà, 2015). Certain health authorities preach abstinence while others see low consumption as permissible if part of a healthy lifestyle. One research study summarizes this incongruous debate:

> For health systems, alcohol consumption has been a matter of strong debate, because findings from different studies on the effects of alcohol in CVD have been contradictory. Whereas the majority of studies have found that low–moderate alcohol consumption may be beneficial—or at least not harmful—for the CV system by reducing the risk of major adverse CV events, excessive alcohol consumption increases the risk of CVD and is associated with increased risk of more than 50 diseases (Chiva-Blanch & Badimon, 2019, p. 1).

The reason alcohol is controversial is studies such as Djoussé et al. who reported that, "86.3% of the lower risk of CVD observed in moderate drinkers was explained by alcohol effects on lipids, glucose metabolism, inflammatory/hemostatic factors, and blood pressure" (2009, p. 240). Interestingly, there are present differences between genders on the influence of alcohol and risks. Fernández-Solà found for example that, "susceptibility factors influence the degree of alcohol-induced heart damage, and include gender, as women are more sensitive than men to the harmful cardiac effects" (2015, p. 577).

Summarizing the information, when advising on the consumption of alcohol, erring on the side of caution, SD should enforce abstinence or cessation plan for individuals. Fernández-Solà supports this point stating that, "Although low-dose alcohol decreases mortality, reducing alcohol consumption has global health benefits, and the beneficial versus detrimental effects of low-dose alcohol should be carefully considered" (2015, p. 577).

Tobacco. There is little surprise that one of the most documented, negative contributing factors that increases CVD is smoking tobacco products (Arnett et al., 2019; Lichtenstein et al., 2006; Reddy et al., 2016). Most commonly tobacco is consumed in the form of cigarettes, but with a rise in nicotine vaping products also contributing to increased levels of CVD (Benowitz & Burbank, 2016).

Documented by various reputable health organizations the composition of tobacco is detrimental to HH, as the "Constituents of most concern with respect to cardiovascular disease are (1) oxidizing chemicals, (2) carbon monoxide, (3) volatile organic compounds, (4) particulates, (5) heavy metals, and (6) nicotine" (Benowitz & Burbank, 2016. p. 516). All these chemicals and pollutants cause significant damage to HH, including stroke and other immediate adverse effects (Arnett et al., 2019). Secondhand smoke is also a large problem, "Exposure to environmental tobacco smoke is also a significant risk factor for CVD" (Erhardt, 2009, p. 26). This underlines the social aspect to tobacco and interconnectedness of people (Christakis, 2010). Despite the negative coverage of tobacco products by organization, research shows "Smoking-associated CVD risk appears to be greatest among younger smokers" (Erhardt, 2009, p. 24), indicating that the problem of tobacco usage is still persistent (Lugo et al., 2017).

As described in Figure 6, tobacco control is an important policy priority. In developing a SD system, recognizing the required cooperation with other services and existing interventions is important in achieving equitable outcomes for HH. Furthermore, when researching the socio-environmental context of the target, this challenge will be considered in the ideation of a service.

Italy's Heart Health

Using the SD process involves understanding the local context and users (Patrício et al., 2011). After researching and discussing the modifiable behavioral risk factors that play a role in CVD and SD implementation, the Italian's context must be analyzed. Local culture, social norms, economic conditions and other factors affect the rates of CVD and the ideation of service solutions (Moritz, 2009; Lichtenstein et al., 2006). Specifically when covering the Italian context, the role of the MED diet, the highly sedentary populace, discrepancies in health outcomes, the rates of smoking and the gaps in the national healthcare system are items of note when designing for a new service (Damiani et al., 2011; Fornari et al., 2010; Lugo et al., 2017; Patrício et al., 2019; Tintori, 2015).

The Italian Context

In Italy, research shows that roughly "28% of deaths in the age range 35–74 years are due to CVD" (Damiani et al., 2011, p. 591). This means that over one out of four people could benefit from preventative measures, iterating Figure 6, and that many are suffering from CVD issues but might not be aware. Furthermore, in a national research study from 2018 regarding the risks of CVD, 40% of respondents had at least three of the risk factors and only a fraction of respondents (less than 3%) were free from CVD risk (La Sorveglianza Passi, 2018).

Since lifestyle factors can influence CVD, how these components differ within the Italian context require attention when designing a service. Starting off with diet, Italy has the geographic predisposition of almost exclusively following the MED diet. This suggests that Italians, on average, are eating healthy in comparison to other countries. As evidenced, "a significantly lower rate of cardiovascular complications in patients who had had a myocardial infarction and followed the MED diet as compared to those who followed the American Heart Association Step I diet" (Dontas et al., 2007, p. 110). The MED diet is in fact one of the key suggestions towards preventative HH behaviors (Arnett et al., 2019; Grosso et al., 2014; Mozaffarian, 2016). Italians have built in the MED diet into their nutritional guideline as evidenced in the makeup of the national food pyramid (Cannella et al., n.d.).

As discussed, the primary protective HH benefits come from the higher consumption of olive oil, fruits, vegetables and legumes, all of which are reflected in Figure 9, the Italian food pyramid. In comparison to other diets, some key distinctions are also the inclusion of exercise within the nutritional diagram, the mention of alcoholic beverages and the specificity in mentioning individual foods like pasta, etc. (Cannella et al., n.d.). Grosso et al., indicated that Italians have a, "medium to high adherence to the Mediterranean diet" and that, "The beneficial role of this dietary patterns has been demonstrated both in studies of primary and secondary prevention, improving glycemic control, ameliorating systolic and diastolic blood pressure, and protecting from fatal coronary heart disease events" (2014, p. 371).

Although Italians are closely following the MED diet, improvements can still be made. Estimates show that increasing consumptions of fruits and vegetables can reduce CVD related mortality by thousands of individuals. Aune et al. (2017) in Supplementary Table 33 calculated the mortality in Italy due to a fruit and vegetable intake below 500 grams per day and 800 grams per day for coronary disease and stroke, respectively.

500 grams/day		800 grams/day		500 grams/day		800 grams/day	
%	Coronary disease	%	Coronary disease	%	Strokes	%	Strokes
4.5	4,918	10.2	11,154	11.4	8,017	24.2	17,039

Figure 9. Italian Food Pyramid
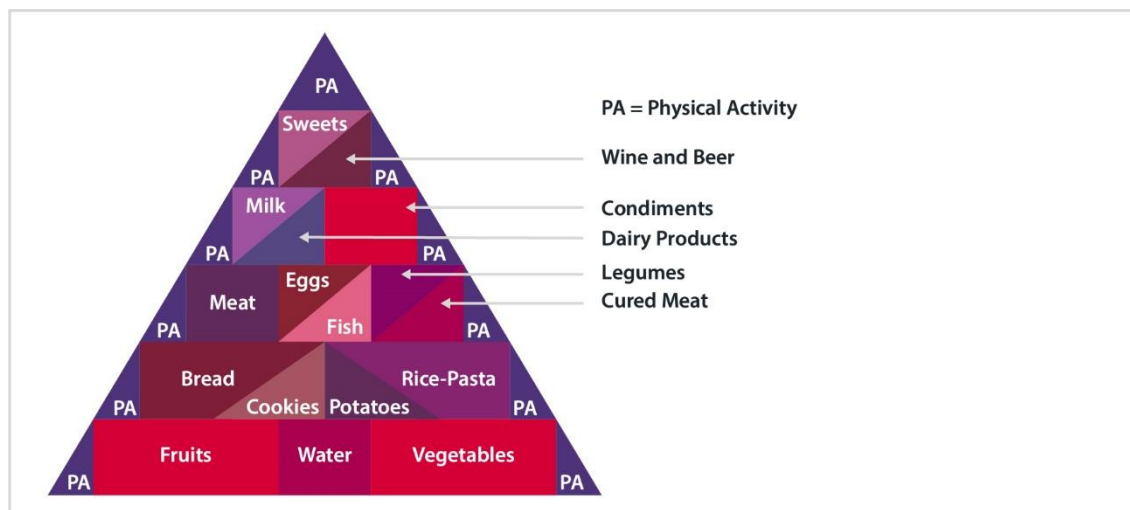
Note: Figure 9 is graphically adapted from Cannella et al., n.d.

In Italy, physical activity is affected by the cultural context and the modern social context (Musumeci, 2016; Tintori, 2015). Reported by Musumeci, "Italy currently has no national health monitoring or surveillance system for physical activity" (2016, p. 269) indicating a lack of resources and attention to the issue of inactivity. As a result, despite the adherence to the MED diet, "According to the International Obesity Task Force, Greece, Spain, and Italy showed the highest prevalence for both overweight and obesity" (Grosso et al., 2014, p. 370). Tintori also reported that, "Italy places high in the OECD obesity ranking, after the United States and Greece. This is an alarming statistic…" (2015, p. 9). This is supported by the national statistics source, La Sorveglianza Passi, who reported that one quarter to one third of the population being completely inactive (2018). Tintori's research expands into Italy's relationship with physical activity and relates that there has been a general increase in inactive individuals, "In Italy there has been a decrease in the number of those who practice sports and an increase in the sedentary population" (2015, p. 5). Furthermore, Tintori research links the level of education to the amount of physical activity practiced, indicating a correlation: people with higher levels of educational attainment exercise more frequently and meet health guidelines (2015).

Mental stress in Italy is important to discuss as a mentioned risk factor to the development of CVD. The national statistics source, La Sorveglianza Passi, under the quality of life and health reported that perception of mental health is positive, with nearly 70% of adults reporting good health (2018). However, the national index indicates that percentage is significantly reduced in certain population groups. In fact, those who consistently report a worse state of health are predominantly women, elderly and those with low levels of education attained.

Moderate alcohol consumption is considered part of the MED diet, as seen in Figure 9 and as reported by Benedetti et al (2016). Although there was a decrease of 18.8% during the last decade, alcohol consumption is still problematic as the sixth most influential risk factor for premature deaths in Italy (La Sorveglianza Passi, 2018). In designing a service, the advice should focus on cessation given the problematic nature of moderation as evidenced by Fernández-Solà (2015).

Smoking and tobacco usage in Italy are relatively low, as evidenced by Lugo et al.'s research that indicated Italian women are smoking less and only 20% of women being smokers (2017). However, tobacco is still extremely detrimental as, "CVD is the leading cause of death from smoking" (Erhardt, 2009, p.26). Furthermore, even low consumption is extremely toxic as Erhardt evidences, " 5.6% [risk increase] for every additional cigarette smoked per day. Moreover, the smoking exposure to risk

relationship is greater for females than males" (2009, p. 26). Lastly, smoking status affects other lifestyle factors, as Benedetti et al points out, "Not smoking was found to be related with healthier tendency towards food: in fact people who never smoked or stopped smoking appear to adhere more to MED" (2016, p. 439). In designing as SD intervention, realizing that a portion of users are smokers is an important consideration given the impact on health.

Summarizing the findings for the Italian context, the role of the MED diet, the increasingly sedentary populace, the perception towards quality of life and overall well-being, the inclusion of alcohol as part of the national dietary guideline and the shifting trends of tobacco usage all influence the development of a SD system. Exploring the effect of these factors, the next section will discuss how CVD impacts Italy's healthcare system and the current state of HH care, including future challenges.

Figure 10. Physical Activity Guidelines Italy
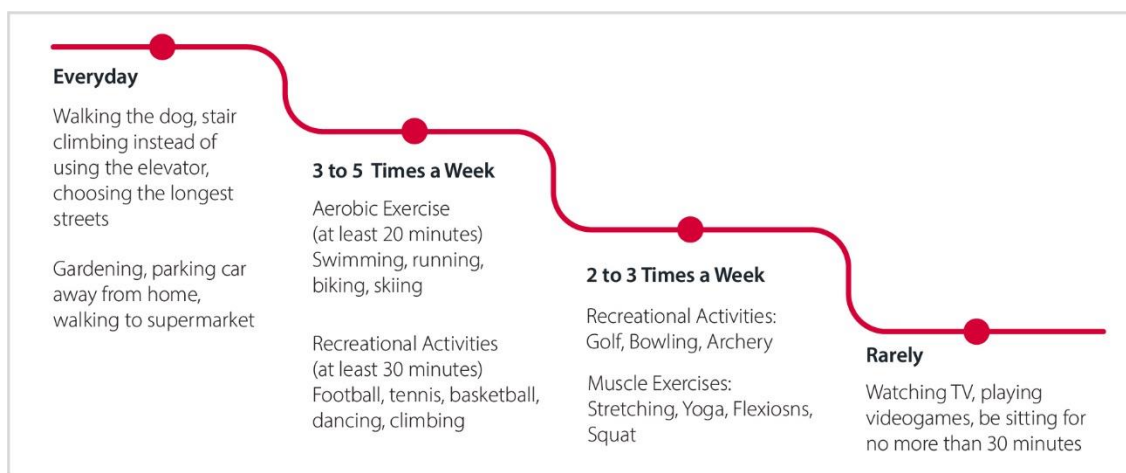
Note: Figure 10 is graphically adapted and summarized from Musumeci, 2016, p. 271

The Effect and Gaps in the Italian Healthcare System

Cardiovascular diseases are a global problem but affect Italy in a unique way. Italy's national healthcare system offers care for nearly everyone and is almost entirely free, with minimal fees collected from tickets and medications (Teso et al., 2013). Given that healthcare is subsidized, saving money through increased efficiency, preventative measures and new caregiving systems is increasingly important to deliver quality healthcare (Patrício et al., 2019). SD can offer innovative approaches to tackle these areas and to propose new concepts for better HH. European level estimates show that the current cost of cardiovascular diseases is around 200 billion euro per year. Of the 200 billion euro, approximately half is represented by costs incurred by the healthcare systems (employees, facilities, training, equipment, etc.). One quarter of the cost is linked to the loss of productivity, which is even more pronounced in a country like Italy, which has lower productivity than in the main industrialized European countries. The last portion of the cost is assumed by informal healthcare, composed of all the costs incurred by the families in attending for someone with CVD (Mennini, 2017).

Regarding the burden of the medical system, the impact of CVD in Italy is quite taxing. Iterating the prior statistics on the cost of CVD, Mennini's studies estimate that, "In Italy these direct costs for the NHS are around 16 billion euros per year, to which must be added around 5 billion euros in terms of indirect costs calculated mainly as a loss of productivity" (2017, p. 1). With this high cost, reducing and optimizing healthcare spending is crucial.

Adding onto the expenses and inefficiencies, Italy is forecasted to have a drastic shortage of doctors. Calculations show that by 2025, it is estimated that fourteen million Italians will be without a

family doctor. GP's are already overwhelmed, handling up to fifteen hundred patients each (Pini, 2018). This alarming statistic indicates the need for innovative approaches to deliver care in the absence of medical professionals. Furthermore, the thinly stretched healthcare system must focus on preventative measures and behavioral changes to offset the need for medical interventions altogether (Teso et al., 2013, p. 42). This estimate is not the only measure by which the Italian system will be burdened. ANSA, an Italian news organization reported on further estimates that forty-five thousand doctors would be leaving the medical field by 2025 (Redazione Ansa, 2018). This decrease in medical professionals was announced by the National Health Service and is expected as a result from the incoming retirement wave. Further evidence shows that by 2028, nearly thirty-four thousand general practitioners and almost fifty thousand hospital doctors will have retired, bringing the total decrease in professionals at around eighty thousand (Redazione Ansa, 2018).

In summation, not only is CVD expensive to treat and taxing on the resources of the Italian healthcare system, but the research estimates indicate that regardless of finances, the healthcare system will not be able to handle the forecasted demand of care. This critical condition indicates the need for alternative modalities of thought and new services to account for this impending need. Given the future scarcity of HH care and changing dynamics in healthcare, understanding which segments of the population will be most affected will help in prioritizing a SD solution.

The At-Risk Population

SD's analytical focus through the mapping of systems and contexts uncovers gaps and challenges within the topics explored (Moritz, 2009; Teso et al., 2013). DT and HCD both focus their process on a specific target when designing a new concept, as seen in Figures 1, 2, 3 and 5. HCD in particular focuses on using population extremes for the generation of innovative solutions and concepts (IDEO, 2015). In the research, sources like Mozzaffarian indicated that, "Among disadvantaged populations…diet-related cardiometabolic diseases such as coronary heart disease (CHD), stroke, type 2 diabetes mellitus, and obesity produce even larger global health burdens" (2016, p. 187). Inequalities in heart health not only exist but are particularly problematic. This research is supported by Reddy et al. who states, "Not only are healthcare expenses and lost productivity themselves troubling, but non-communicable diseases (NCDs) exacerbate inequality–costing poorer households a far greater proportion of their income" (2016, p.10). This all indicates that a focus on at-risk populations, as expressed in the objectives, can provide new opportunities for the design of a service system (Gale et al., 2011; Holeman & Kane, 2020).

Throughout the secondary research, attention was paid to patterns of groups affected by HH. Women were found to be more at risk from CVD in nearly all aspects of lifestyle behavior. From physical activity to alcohol, they were more susceptible and disproportionately affected (Albert et al., 2017; Fernández-Solà, 2015). Another pattern observed was the importance and the role of education, as seen in Dar et al. (2019) and Damiani et al. (2011). Using these insights, further research about the effect of education and gender disparities on HH will be explored. The objective will be to define an at-risk target audience for the service system design (Dam & Siang, n.d.-a; IDEO, 2015).

Low Levels of Educational Attainment

CVD risk is affected by modifiable behavioral lifestyle factors such as diet and physical activity but also by other circumstances such as economic difficulty, social setting and educational achievement (Arnett et al., 2019; Reddy et al., 2016). When designing a service, considering all the various factors that affect an individual's risk and ability to implement changes is important (Moritz, 2009).

Understanding how education affects HH in Italy is crucial when trying tailoring a solution. In labeling educational attainment, the definition and classification by the Organization for Economic Co-operation and Development (OECD) and UNESCO as defined in Roser and Ortiz-Ospina (2016) is used

to classify the various segments of the population. The main classifications of concern for this work are: low levels of education attained, middle levels of education attained, high levels of education attained (UNESCO Institute for Statistics, 2012). As a metric, those who have ISCED 3 or lower are considered with low levels of educational attainment; this definition encompasses those who highest educational completion was upper secondary education, or high school (UNESCO Institute for Statistics, 2012).

Research shows that education plays an even greater role in HH. Using education as a marker is also a more accurate way of understanding an individual's relationship with health. Research indicates that, "low education was a stronger marker for cardiovascular disease and mortality than was wealth. This association was most marked in low-income countries" (Rosengren et al., 2019, p. 749). The impact of education achievement towards HH is significant, with Tillman et al. indicating that, "Each additional 3.6 years of education (1 SD) was associated with 27% lower odds of prevalent CHD" (2017, p. 4).

Although healthcare in Italy is nearly free and accessible to everyone, lower educational attainment creates a disparity in CVD rates. Specifically, individuals with lower levels of education are less likely to be living healthy lifestyles, be familiar with the causes of CVD and recognize symptoms. This is supported by Musumeci's findings that, "the risk of physical inactivity increases with age, and is higher among people with low educational attainment and economic difficulties" (2016, p. 269). The WHO also expresses similar findings with this at-risk target, indicating the relationship with education and lifestyle preventative actions (2019). Damiani et al,'s research confirms that, "In Italy, several studies have shown the role of socio-economic determinants of inequalities in incidence and mortality for CVD. Moreover, an inverse association between the prevalence of major cardiovascular risk factors and socio-economic status (SES) was observed" (2011, p. 591).

Italy overall has a high level of education attainment (La Sorveglianza Passi, 2018, Table socio-demographic characteristics). However, there is a portion of the population that is behind the national average. Of this group, women are statistically more at risk of CVD than their peers (Orthmann, 2019). As evidenced in this research from Italy, Fornari et al. found that, "in women, blood pressure, triglycerides, BMI levels and prevalence of diabetes and antihypertensive treatment had an increasing trend from high to low levels of education" (2010, p. 4).

In conclusion, low levels of educational attainment directly affect the rates of CVD. In addition to the modifiable lifestyle factors, education becomes a stratified consideration when implementing a service system solution. This segment of the population focuses the design to work from the principle of extremes, a practice utilized in the HCD process (IDEO, 2015).

Women and Heart Health

Throughout the research, women presented an elevated risk of CVD due to a series of behavioral factors, social factors and contextual factors. This group has only recently gained attention in the medical field, as Volgaman states, "more women were dying of cardiovascular disease, and doctors were not aware of this fact" (2019, para. 6). The pervasiveness of CVD among women is such that even the US surgeon general, when proposing a program for HH, mentions his mother as a source of inspiration, "I reflected on my mother [who] always puts others first… [She] heard me and decided that the next morning she would go on the first of many future walks" ("Stepping into Healthier Communities," 2017, p. 3). This gap indicates a disparity of outcomes within the healthcare system. This problem is supported by a plethora of scientific evidence on the major modifiable HH topics. Starting with dietary habits, Grosso et al. noted that hypertension was almost double, with "38.7% in men and 61.3% in women" (2014, p. 373) despite the higher adherence as evidenced in Benedetti et al., "women (61.18%)" (2016, p. 437). Regarding physical activity, Italian women show high level of inactivity according to population studies, as supported in Tintori, "From 2010 to 2013, however, there has been an increase in the number of both sedentary men and women; sedentary women are getting close to 50% of the female population" (2015, p. 12). In terms of alcohol consumption, although drinking at lower levels, "women are more exposed than

men to death for any cause at moderate to heavy levels of alcohol consumption" (Chiva-Blanch & Badimon, 2019, p. 4)

Orthmann's findings indicate that, Italian women have a lower perception of risk and as such typically underestimate the symptoms, resulting in delayed access to emergency room services (2019). Furthermore, women are generally more difficult to diagnose given their broad ranging and non-specific clinical manifestations (WHO, 2017). Orthmann also evidences that Italian women are often treated pharmacologically less aggressively than men, tend to have greater complications and worse prognosis (2019). Orthmann further asserts that women often neglect their health to devote themselves to the care of other family members (2019), a statement supported by Albert et al. who linked "caregiving and job stress for which we and others have demonstrated significant increases in CVD risk with elevated reports of these stressors" (2017, p. 10).

Tintori's findings on Italian women indicate problems due to the socio-cultural context present (2015). Tintori further asserts that, women who do not have children have greater opportunity to take care of their own physical health and wellbeing (2015). Summarizing this point, Tintori states that "in our society there is still a rigid and sexist division of gender roles" to which he remarks, "which culturally supports the stereotype where the family care – childcare, as well as the assistance for the elderly or dependent – is considered as obvious a [natural] female task" (2015, p. 12). In support of Tintori's claims, Giardina in the abstract gives a résumé of all the issues particularly affecting women:

> Approximately 35% of heart attacks in women are believed to go unnoticed or unreported. However, because of increased age, women are more likely to have co-morbid diseases such as diabetes and hypertension. In women, not only is "tightness" or discomfort in the chest a warning sign, but in addition, nausea and dizziness are common indicators of myocardial ischemia. Other symptoms include breathlessness, perspiration, a sensation of fluttering in the heart, and fullness in the chest. (2000, Abstract)

Summarizing the research findings, data has supported that conclusion that Italian women are particularly vulnerable to CVD. In considering a SD solution, this research will help guide the primary research and empathizing and help define the scope of the service.

Defining the Target

Using the framework established in DT and in HCD, defining the target is important to create a considered service (IDEO, 2015; Patrício et al., 2011). This allows for the careful examination of needs and the development of impactful solutions. Following the DT method seen in Figures 1 and 2, the defining of a problem is part of the process (Dam & Siang, n.d.-a; Heffernan, 2019). To begin identifying the needs for this audience and the services that could be constructed, confirmatory primary research will help empathize and uncover opportunities for SD thinking.

Briefly summarizing the secondary research so far, the MED diet, the low levels of physical activity, the social context and the foreseen shortages in the healthcare system indicate a need for innovation for HH in Italy (Fornari et al., 2010; Grosso et al., 2014; Pini, 2018; Volgman, 2019). Furthermore, looking at the at-risk populations, research shows that Italian women are suffering more from CVD due to a variety of factors. In particular, the cross section of women with low levels of educational attainment is at higher risk (Rosengren et al., 2019). Damiani et al. supports this claim with, "An increasing...cholesterol and body weight was found among women with low educational level" (2010, p. 591) and the WHO recognizes this same patten, "Women with fewer years in education face the most inequality, in terms of being at risk of CVD" (2019, p. 46). All these considerations lead to the rationale that Italian women with low levels of educational attainment are the highest at-risk population for CVD and would benefit the most from a SD innovation for HH care.

4. Primary Research

Using the HCD and DT approach and empathizing with the target is an important step in creating a considered SD solution (Dam & Siang, n.d.-a; IDEO, 2015; Patrício et al., 2011). Primary research is composed of interviews, group interviews, shadowing and other firsthand research tools (Moritz, 2009). Following the secondary research, interviewing subject matter experts, listening to Italian women participants and using cultural probes is beneficial in understanding the determining factors that resulted in the statistical CVD disparities observed prior. Primary research helps to illuminate why women aren't exercising as much, how they implement the MED diet, how low levels of educational attainment affects their choices and how preventative actions can be taken will be explored though expert and user engagement (*Healthcare Customer Journey Mapping*, 2018; Holeman & Kane, 2020). Testing assumptions from the research data will also be important to clarify the direction of the service prototyping (IBM Studios, 2018). For the methodology in the primary research, experts relevant to the topic will be consulted as well as users pertinent to the target. The objective of this stage is to empathize and gather a diverse set of data for the synthesis and eventual ideation.

Expert Interviews

With the help of subject matter experts, such as cardiologist and medical professionals, several questions were raised on the evidenced disparities observed in the secondary research. Furthermore, questions were asked about their interactions with patients, lifestyle recommendations and gaps in research to better understand the context. Experts present a great opportunity to learn about macro perspective, feelings, problems and areas of opportunity within the system (IDEO, 2015; Moritz, 2009). Experts were selected based on their relevance to the topic of HH and their expertise. While some guiding questions were used to drive the conversations, most of the discussions were organic in nature. Numbered below is a guiding set questions used in the interviews:

1. How do you inform patients about the risks of heart disease and how to prevent them?
2. Do you recommend any products or technologies to patients? (Optional, as some medical professionals do not recommend any third-party products)
3. Assuming you had encounters where patients did not realize they were at risk of CVD or suffering from poor heart health, how frequently does this occur?
4. According to statistics from Sistema Sanitario Nazionale, ANSA, FIMMG and other journalistic sources, Italy is expected to have a decrease in medical professionals and specialists by 2025. Given this probable future, how can the healthcare system still ensure people are receiving proper heart care?
5. Besides personal technology devices, what do you believe are the best services to encourage the prevention of heart diseases? (as an example: diagnostic screening events, publicity/event campaigns, online support networks, distribution of educational material, school programs, etc.)
6. If your patients could do just one preventative behavior to improve their HH, what should they do?
7. What are your thoughts on patients using heart rate monitors, phone apps and other entry level diagnostic equipment for monitoring their heart health?
8. Is there an aspect of heart health that you believe is currently overlooked? (As an example: the work life stress, education level or social influences affecting CVD, etc.)
9. What is the most common demographic (gender, race, age) that gets treated at your practice and why is this group at an elevated risk?

Expert 1 - Dr. Farina

The first expert identified was Dr. Farina (Dr. A. Farina, personal communication, January 26, 2020). Doctor Farina was a qualified expert to comment on the topic given his role as Administrator for the Coronary Coronary Care Unit at Ospedale di Lecco since 2008 and certified cardiologist graduated from Università degli Studi di Milano-Bicocca. Starting off the conversation on the approach to talking about HH, Dr. Farina stressed that CVD was a leading cause of death in many countries, such as Italy. The doctor enumerated the symptoms appearing as chest pain, to heart attacks to sudden death, underscoring the severity of the issue. However, the doctor also mentioned that CVD is highly treatable if diagnosed properly ahead of time and if lifestyle was properly adjusted.

Regarding a query about CVD prevention, the doctor mentioned that most discussions are post incidents and the intervention efforts are focused preventing secondary events. The advice given is focused on healthy behaviors such as regular exercise, dieting with the MED guideline and smoking cessation. Regarding other early detection and prevention, the doctor mentioned the importance of regular checkups and examinations such as the ECG, blood work and early symptom identification. The doctor did stress that some cases are not preventable given their genetic nature, and as such are nearly impossible to treat. This statement echoes the secondary research which stated that genetic variables are randomly allocated (Tillmann et al., 2017).

Discussing the healthcare system, Dr. Farina mentioned that despite the various defects of the Italian SSN, the system provides care and help nearly everyone. In terms of the usage of wearables on other technological tools for the prevention and identification of early CVD symptoms, Dr. Farina commented, "For a heart attack, they are not useful, however for something like arrhythmia, instead of needing to consult with a doctor or going to the ER, they serve as a recording tool that can be then sent to a medical professional for remote consultation" (personal communication, January 26, 2020). However, the doctor expressed that the cost of such devices was an unreasonable expectation for widespread population adoption. On the topic of technology, Dr. Farina mentioned that currently telemedicine is evolving but primarily serves patients with interconnected devices such as pacemakers and defibrillators.

In concluding the interview, Dr. Farina spoke at length about the negative effects of tobacco and the need for cessation. When pressed about Italian habits towards smoking, he asserted a trend that Italian women he oversees were smoking more than prior years. The doctor mentioned in his practice that rates of tobacco usage between women and men were relatively similar.

Expert 2 - Dr. Toldo

The second expert interviewed was Dr. Toldo (Dr. S. Toldo, personal communication, July 22, 2020). The doctor was qualified to speak about HH given his involvement for seven years with the Italian Society of Cardiology and his current professional affiliation with the American Heart Association. Although Dr. Toldo does not have direct contact with patients, the doctor's expertise and research on the topic was equally valuable. Speaking with Dr. Toldo, when discussing preventative HH lifestyle behaviors, he noted the importance of an "active life". The doctor gave some examples such as walking around the house, avoiding sitting for extended periods of time and using stairs instead of elevators. The doctor's comments recall similar guidelines to those mentioned in Musumeci (2016) and by Tintori (2015) which encourage basic movement as an everyday behavior. When asked about gaps in research and new areas of focus, Dr. Toldo mentioned the importance of dietary interventions for individuals, expressing the importance of food quality in the pursuit of better HH. The doctor noted that academic research tends to focus too narrowly on the reduction and consumption of calories, whereas food patterns and the constitution of meals should have a greater emphasis. This point iterates the secondary research of Eckel et al. (2014) whose recommendations to the AHA guidelines on nutrition should focus on macro food patterns rather than calorie counting. Talking about lifestyle changes, Dr. Toldo pointed out how the

intervention process can be difficult and frustrating and that many individual rebound post an intervention back to old habits This is particularly important when implementing a long term SD system whereby change is gradual or requires the vigilance of the user. When asked about the usage of technological HH tracking devices such as the Apple Watch, Dr. Toldo responded positively to their usage, mentioning their importance in picking up abnormalities. However, Dr. Toldo as part of the same discussion emphasized some of the negative sides of these devices, such as paranoia, incorrect readings and accuracy. As an example, Dr. Toldo mentioned certain readings might not be accurate in their description given other physiological changes or confounding effects; proper clinical guidance should accompany any individual usage. Dr. Toldo's recommendation is that individuals with underlying risk such as arrythmia should use these technologies, but healthy individuals should refrain from using them. In conclusion, the doctor warned against an unmoderated usage of clinical devices given the subtlety of the readings and the required expertise to understand the health markers properly.

Expert 3 - Dr. Abbate

Dr. Abbate was qualified to speak about the topic of HH and the Italian context given his of numerous awards and honors in both Italy and the United States, including awards for cardiology research, membership of the European Society of Cardiology and the American Heart Association Basic Science Council (Dr. A Abbate, personal communication, July 30, 2020). When asked about how the doctor informs patients about HH and the risks associated, Dr. Abbate was quite straightforward indicating that the discussion of risks and preventative behaviors was the best way to inform patients about HH. The doctor also discussed the early introduction of medication and by extension medication adherence as a tool for awareness, a statement discussed in Gale et al. (2011). In Dr. Abbate's clinical experience, he mentions not having many patients who were not aware of the risks of HH or being susceptible to CVD. The doctor inferred that given his specialization, usually patients are referred to his care and given notice by their GP. When talking about the preventative lifestyle behaviors the doctor iterated the discussed scientific literature about healthy eating and physical activity and ask key modifiable factors (Arnett et al., 2019; Reddy et al., 2016; WHO, 2019). Discussing overlooked CVD related risk factors, Dr. Abbate firmly believes there is yet to be more contribution in the scientific research towards diet and exercise. This statement iterates Dr. Toldo's professional opinions on nutrition being a key area of research that has yet to develop. Dr. Abbate's comments also reflect findings by Avanzini et al. (2016) where physical activity, diet, body mass and cholesterol are key areas of focus when fighting CVD. In comparison to other doctors and medical professionals, Dr. Abbate was encouraging on the idea of patients using heart rate monitors, phone apps and other entry level diagnostic equipment to monitor their HH. In particular, Dr. Abbate mentioned his professional recommendation of two devices, Kardia and the Apple Watch. Kardia, is a handheld EKG monitor that pair with smartphones and offers a diagnostic remote review for a small fee. The Apple Watch is an everyday wearable that offers a heart rate monitor as a functionality feature, later mentioned in the case studies. Furthermore, Dr. Abbate recommended the Fitbit as a device to monitor HH in individuals. Although Fitbit is less diagnostic but more of a lifestyle device, the health tracking feature and simple visualization is useful for patients (Nes et al., 2017; Raghu et al., 2015; Reddy et al., 2016). Discussing possible services to encourage the prevention of heart diseases, Dr. Abbate encouraged a greater usage of HH screening events, an increase in funding towards publicity and event campaigns, a greater involvement of online medical support networks and the dissemination of educational material. Overall, Dr. Abbate was in favor of proposals that increased preventative lifestyle behaviors though awareness. Lastly, when discussing the imminent threat of decreasing medical professionals in Italy, Dr. Abbate proposed increasing the number of medical students so that people are receiving proper heart care (Pini, 2018; Redazione Ansa, 2018). Interpreting this answer, the proposal of increasing interest in HH awareness and finding a substitute to the shortage is the core of the issue.

Expert 4 - Dr. Johnson

Doctor Johnson was contacted (Dr. G Johnson, personal communication, July 25, 2020). Doctor Johnson was qualified to speak on the topic of HH given 30 plus years expertise in practicing medicine, certified by the American Board of Preventive Medicine. Starting off the interview on risk awareness for HH, the doctor emphasized his discussions with patients on the associated risks of developing detrimental conditions such as obesity, diabetes mellitus, hypertension, hypercholesterolemia. To gauge these risks, the doctor recommended that patients should perform regular evaluations on health markers, such as their blood pressure, blood sugar levels and cholesterol. Despite the preventative discussions and regular routine checks, Dr. Johnson commented that roughly one out of four or five patients screened is suffering of poor heart health, unknowingly. This indicates a significant gap in the screening and preventative behavior efforts by the part of the healthcare system and the individuals. Regarding at risk individuals and populations, the doctor commented on the elevated risk for individuals who were constantly sedentary and had a poor nutritional diet. In this example, the doctor mentioned people working within transportation or warehousing, given the nature of their employment. This is consistent with the secondary research findings about physical activity, as mentioned in the WHO factsheet (2019) and from Pinckard et al. contribution to the importance of exercise to avoid the development of CVD (2019). When asked about the usage of technological devices, Dr. Johnson emphasized the importance of early identification, but cautioned against sole reliance of said devices. This iterates Dr. Toldo's comments on having a medical professional or expert guide the usage and verify readings. In concluding the conversation, Dr. Johnson sees promise for the further development and usage of telehealth as an efficiency tool. This statement iterates the secondary research by Reddy et al. (2016) and Raghu et al. (2015), who anticipate the usage of digital technologies as a promising innovation in the treatment of HH.

Summation

From this sample of expert observations and opinions, the main takeaways are the importance of SD interventions that emphasize preventative behaviors and early symptom identification (Holeman & Kane, 2020). In terms of preventative behaviors, unsurprisingly most medical experts emphasized similar recommendations evidenced in the secondary research, such as proper diet and increased physical activity (Arnett et al., 2019). While this recommendation is important, the implementation of this guideline is often difficult to achieve in practice, as Avanzini et al. points out (2016). As such, the questions oriented towards patient empowerment and self-awareness were important in trying to close this gap. When asked about the usage of HH devices to measure health markets, the doctors all echoed a similar sentiment of usefulness mixed with caution. This response was particularly of interest as it put the traditional systems of HH care in contrast with self-care guided by technology. A bias in interviewing doctors is their role as stakeholders in the system. This limits them from having an external perspective as their interaction with patients tends to be within the modalities of traditional care.

Survey 1

Utilizing the SD process, the secondary research has revealed Italian women with low levels of educational attainment for being at greater risk of CVD incidence. This population would benefit the most from a service solution for HH given inattention by current healthcare systems. To better empathize with this target, a survey was launched (Moritz, 2009). The aim of the survey was to gather quantitative data for comparison to the secondary statistics and qualitative data to empathize through the understanding of attitudes and feelings. Users were found using Facebook groups local to Milan, Italy. The data collection suffers from convenience sampling error and as such statistical inference will not be drawn. However, given the long format questions in the survey, this tool served as an indirect interview and helped to

understand the local context through a variety of responses. Full responses are found in Appendix B Survey 1.

Questions

Although data on Italian women with low levels of educational attainment helps to understand some of the context and reasoning behind the disparity in outcomes, several questions regarding this user segment remain. As such, the following section lists questions and underlying reasons for the information (IDEO, 2015). To help identify trends among individual responses, some quantitative metrics were asked such as age, educational attainment, hours worked weekly and tobacco usage. The first question asked was about the user most physically demanding activity and the feelings. This question was aimed to gauge the level of sedentarism and the perception of exercise, an observed point in Tintori (2015) who pointed out that sedentarism was close to 50% of the Italian population. The second question was focused on discovering which health problems Italian women respondents were concerned about and how they tried to mitigate their health risk. Given the high mortality for women in Italy from CVD, (La Sorveglianza Passi, 2018; Orthmann, 2019; Tintori, 2015) the assumption that led to this question was that there is a lack of awareness, education and action towards the prevention and treatment of HH. The second portion of the question was aimed to see the pro-emptiness regarding potential health risks. This is in response to Reddy et al. assertion that there is apathy towards diseases that seem distant or abstract (2016). Following this question, the inquiry was made to the relationship between patients and Italian doctors, in specific towards both positive and negative experiences. Although Italy has one of the best healthcare systems (Teso et al., 2013), receiving feedback from both sides of the system is important to get a full understanding of the context. Furthermore, understanding the attitudes and feelings regarding personal experiences can help improve the service offering (Moritz, 2009). In the same line of questioning, the question was posed about if and how frequently do discussion about HH play a role in a regular GP visit. The assumption was women were more difficult to diagnose and received less attention than their male counterparts within the Italian healthcare system (Giardina, 2000; Orthmann, 2019). As such, probing about the actual preventative measures within the healthcare system was important to get a baseline understanding. Another question asked to participants was their process in researching or asking about information when they have a health question. Since the secondary research did not cover how Italian women were learning about health, the aim of this question was to shed some understanding about the process by which HH education is attained. Given that lower levels of educational attainment play a large role in determining CVD risk, understanding how this gap is evidenced in practice would help when creating a SD system (Damiani et al., 2011; Rosengren et al., 2019). Lastly, in terms of awareness and comprehension, the question about symptom identification was posed to participants. Given the high mortality and lack of specificity in symptomatology, by analyzing the current level of comprehension, this question was used to understand what aspects are overlooked and create the gap in knowledge for the at-risk Italian women (Damiani et al., 2010; WHO, 2017).

Results

Full responses recorded on Appendix B, Survey 1. Insights gathered from 62 online respondents (Survey 1, Mar 19, 2020). Summarizing all these responses, Figure 11 showcases trends and statistics drawn from this small sample group. Notable comments that drove insights to the relationship with the healthcare system included: "they pass more time on the PC to fill out modules that to visit you, personal experience 5 minutes to visit me 15 fill in the report" (Participant 1), "Almost bureaucratic. Too many patients" (Participant 62). "I just changed doctor because I have transferred. I don't like him very much, he's cold and seems superficial" (Participant 56). "I changed the doctor a year ago and I've never seen him or heard him" (Participant 34). "I see very little of them. I changed her recently because the first one was never there. Always substitutes" (Participant 47). Besides the rapport with their GP, respondents

included a range of responses related to exercise habits, the understanding of symptoms, how they research medical information and modifiable behavioral risk factors. As an example, many participants noted "Doing the household chores/cleaning" (Participant 13, 19, 20, 29, 33, 36, etc.), iterating the secondary research of women adopting the traditional role of staying at home.

For brevity, the remaining insights are summarized from the responses. These included: how pharmacies and friends are used for informal health advice, the perception of health being skewed to incorrect health markers, the variance in symptom knowledge indicating gaps in preventive measures, the empowerment or lack thereof motivation for changes and the lack of screening for HH.

Figure 11. Survey 1 Responses
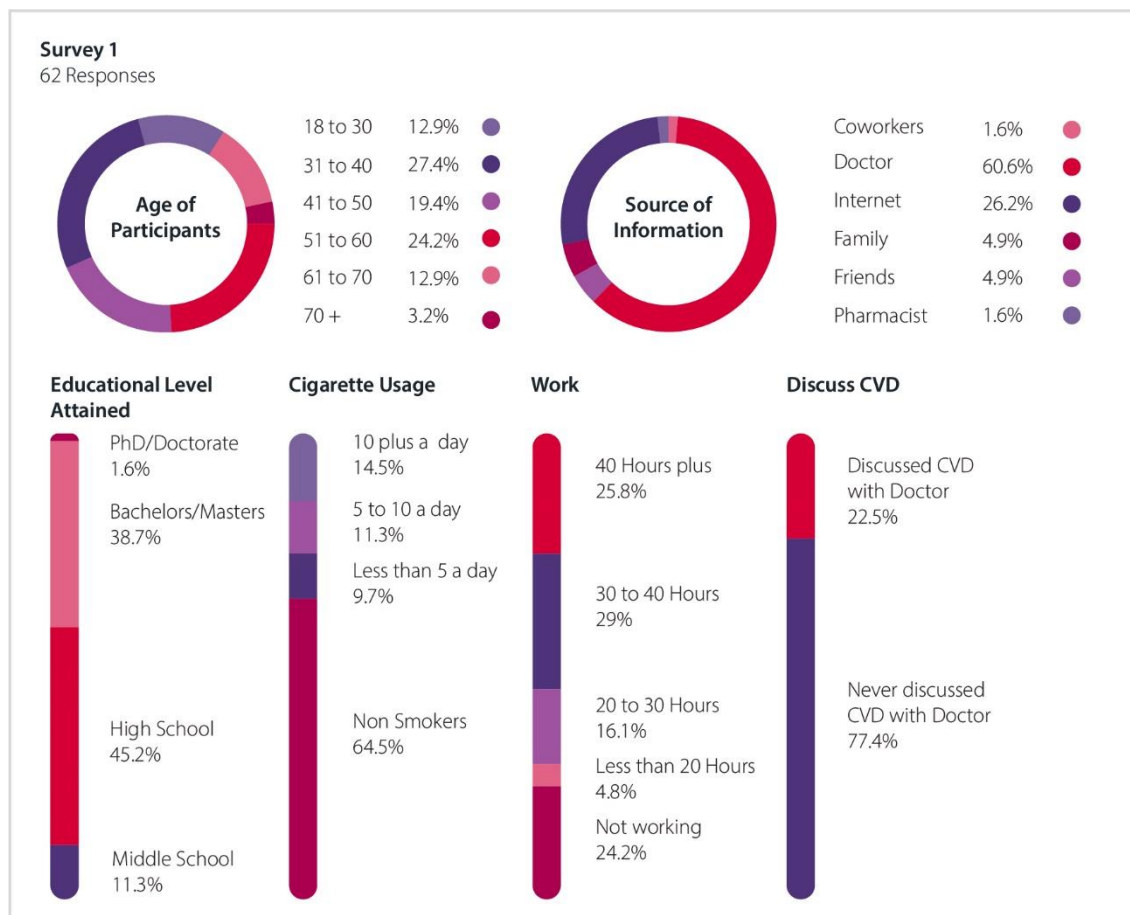
Survey 2

After launching the first survey, reflecting on the results collected, there were gaps in the research about user behavior towards health devices, understanding of symptoms and the general relation of activity towards the impact on HH awareness. Similar to the first survey, users were found using Facebook groups local to Italy. Full responses from participants can be found in Appendix B. The data collection suffers from convenience sampling error and as such is not indicative of population health.

Questions

Quantitative questions such as age, educational attainment, hours worked per week, tobacco usage, frequency of medical visits and role as caregiver were all included in the survey. Qualitative short

form questions included the identification of physical activity during the week, identification of risks associated with CVD, symptom identification and which health markers are utilized measure health. Educational attainment was used as a preliminary gauge to correlate the various other subsequent factors. Given the open field responses, several metrics were used to quantify manually the responses. For physical activity, if the participant had listed doing some activity during the week, they were not considered sedentary. A more careful metric using the 150 minutes of moderate-intensity activity or 75 minutes of vigorous intensity should be used but for simplicity's sake, the criteria had a wider acceptable range (Nes et al., 2017). Included in the count were household chores, which are considered as part of a minimally active lifestyle (Musumeci, 2016). Regarding the scoring of risk assessment, if participants could identify at least two of the lifestyle or other factors of cardiovascular disease, their response was registered as correct. Although single responses such as nutrition or genetics are technically correct, the omission of other important risk factors indicated a lack of understanding (Damiani et al., 2011). Generic responses such as "lifestyle", were not included as they are too broad and open to incorrect interpretations. For symptom identification, the criteria were very broad. Using the WHO factsheet as reference in conjunction with ONDA's report, if participants could properly identify one or two symptoms of poor HH they were considered correct (Orthmann, 2019; WHO, 2017).

Results

Figure 12. Survey 2 Responses
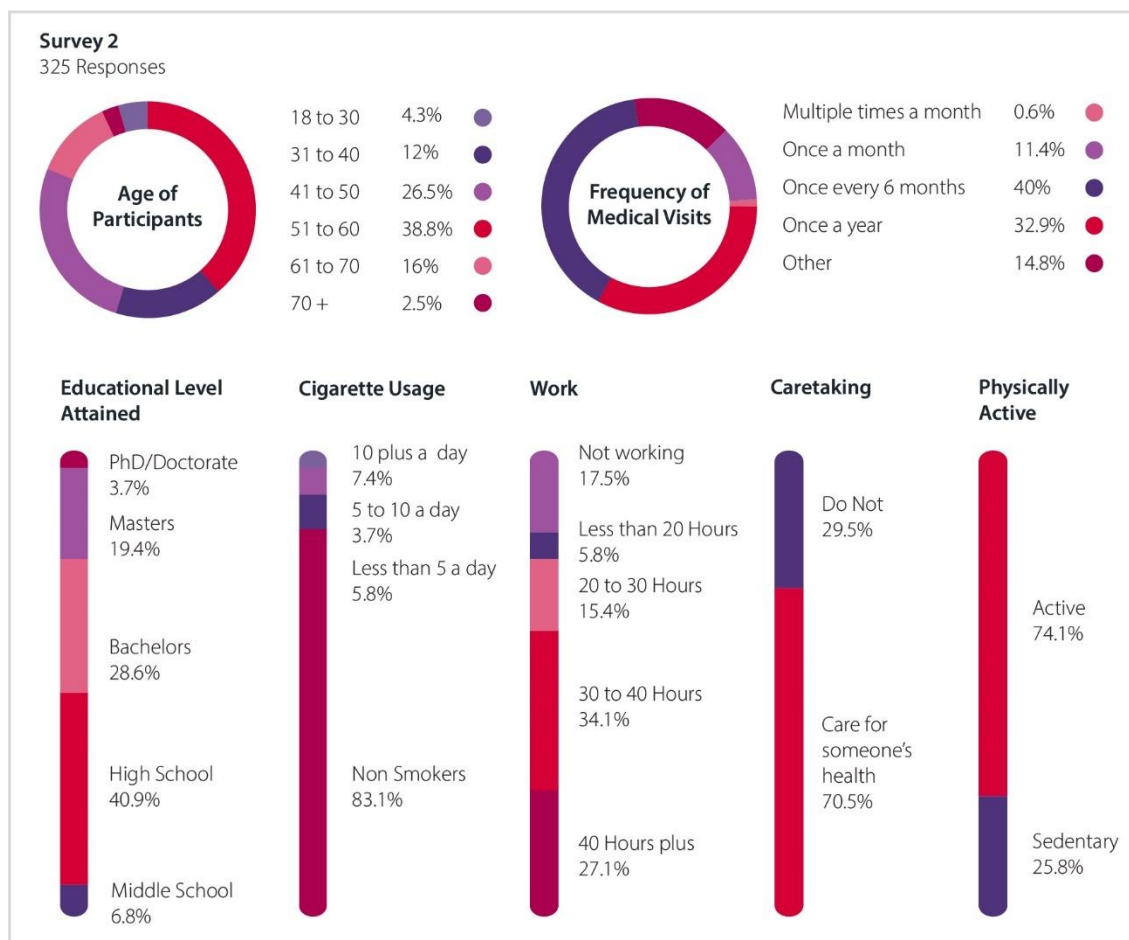
Full responses recorded in Appendix B, Survey 2. From the 325 participants who responded from the survey, 323 were selected. Summarizing these responses, Figure 12 showcases key statistics drawn from this sample of respondents. An unfortunate number of responses indicated no exercise whatsoever the prior week (Participant 4, 15, 18, 24, 35, 44, etc.), indicating a good proportion of women respondents being sedentary. This reiterates findings from the secondary research (La Sorveglianza Passi, 2018; Tintori, 2015). Notable responses included a participant who expressed not having preventative visits unless, "only when I have a really serious illness. Specifically, I have not seen the doctor for 12 years" (Participant 80). Other of note responses included, "I'm very careful about food and I play sports but I allow myself 5 to 6 cigarettes a day" (Participant 231) and "I should have periodic checks...if I were brave" (Participant 317) and "I evaluate the progress of my illness without doing analysis and without going to doctors" (Participant 314). In identification of risks associated with CVD, many respondents repeated stress as a large contributor to the risk of poor heart health (Participant 6, 7, 13, 18, 29, 31, 35, etc.), iterating the secondary research that, "some guidelines recommend stress management in patients at high risk of CVD, such a practice is not yet established as a method of primary prevention in the general population" (Dar et al., 2019, p. 23). Many reported doing the annual checkup and blood work as a health monitoring tool (Participant 4, 9, 17, 19, 20, 29, etc.), while a large portion simply indicated that they listened to their bodies state to determine their health (Participant 49, 57, 76, 79, 130, 156, 204, etc.). Few women reported using devices such as the Apple Watch (Participant 191), Samsung App (Participant 298) but overwhelmingly many relied on medical visits biannually or annually to measure their HH. Figure 13 illustrates how differences between active and inactive individuals played a role in the comprehension of symptoms between various levels of educational attainment and in relation to the usage of health markers. Figure 13 indicates incongruities between sedentary and active but an overall higher recognition of symptoms with individual who used health devices.

Figure 13. Observations Survey 2
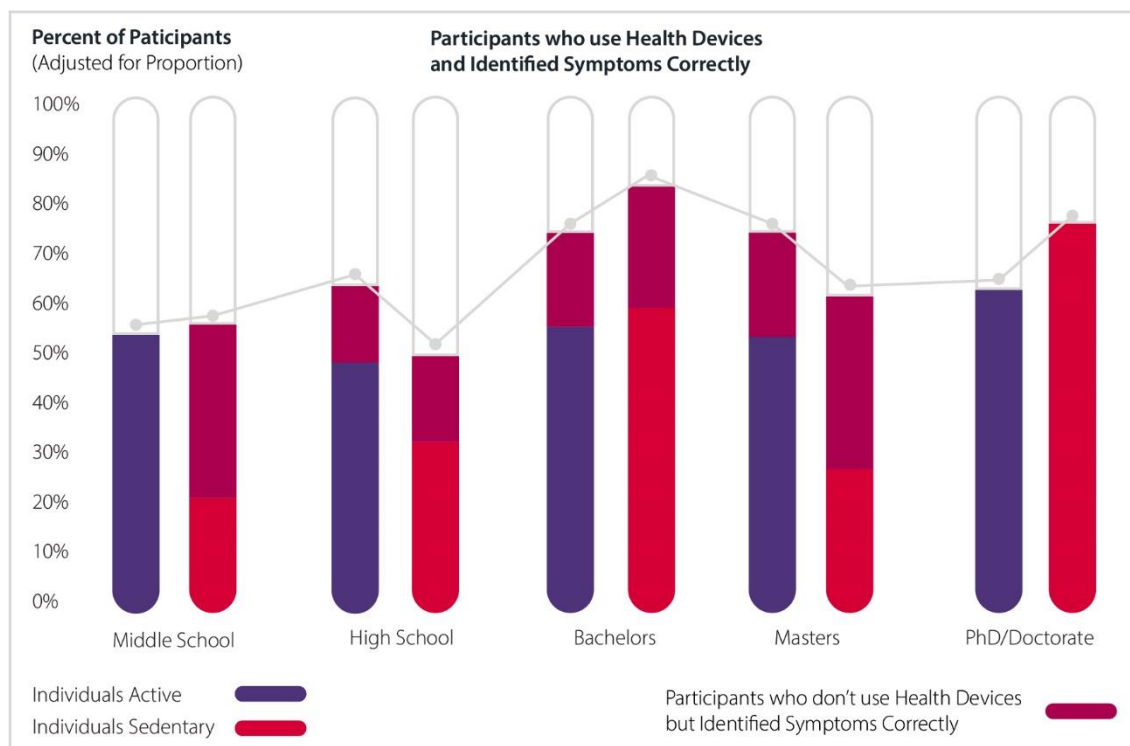
Cultural Probes

Cultural probes are an essential tool when empathizing and identifying user needs for a service system (Moritz, 2009; IDEO, 2015). Probes are designed activities, questionnaires, tools, recordings and more; that allow selected participants to engage in the design process (Gaver et al., 1999; Holeman & Kane, 2020). Probes are created by the designer and can, "include diaries, photo-cameras and other tools that are supplied to clients together with instructions" (Moritz, 2009, p. 195). When trying to understand the context beyond surveys, probes allow designers to gather more information from the target audience and allows a greater freedom on the part of the participants (Gaver et al., 1999; Stickdorn et al., 2018). Probes were sent out digitally through text message to two participants, see Appendix A Illustration 1 for reference. The cultural probes aimed to further answer the following questions:

● What are the criteria that women use to consider themselves healthy?

This question was formed to test the assumption that women are using incorrect or misleading indicators for HH. This is a result from the prior research lower perception of risk, the nonspecific health conditions which makes it difficult for even self-diagnosis and the delayed urgency given the traditional gender role (Orthmann, 2019).

● What devices do they have at home to measure their health?

In conjunction to the first question, understanding the use of health monitoring tools helps identify how some individuals are measuring their health. The assumption is that although there are many ways to track heart health, as participants of Survey 2 indicated, see Appendix B for full responses, the adoption rate could be higher.

● Do women know heart disease symptoms?

Given that CVD related complications are the number one cause of death, the lack of publicity and urgency around heart health being a slow moving killer leads to the assumption that women aren't aware or can recognize the leading symptoms (WHO, 2017). The inverse can also be true, whereas conditions are being identified but proper treatment and support is offered, as evidenced in Giardina (2000).

● What do they think causes cardiovascular issues?

Similar to the prior question about symptoms, recognizing risk factors such as poor diet, lack of physical activity, tobacco and high alcohol consumptions are crucially important when trying to change behaviors and establishing a base knowledge (Arnett et al., 2019; Eckel et al., 2014).

● What are women eating daily?

There is extensive research about the positive benefits of the MED diet and its prevalence in Italy. However, there is also conflicting data as to obesity, overall health and implementation (Benedetti et al., 2016; Grosso et al., 2014). Asking this question helps clarify the participants understanding of the Med. diet and how closely they follow the recommendations.

● What health issues are top of mind for women?

Since CVD is the leading cause of death in Italian women (Orthmann, 2019), there is a dichotomy of assumptions. On one hand, the lack of critically makes it a non-issue for many women. The other side of the assumption is that awareness of this mortality fact is low, hence the inaction towards establishing better health habits.

Interpretations

Utilizing the HCD and DT process, through the expert interviews, surveys and cultural probes, several new insights were gathered (Dam & Siang, n.d.-a; IDEO, 2015). With over four hundred responses from women participants, the primary research helped to better understand how SD could address disparities in HH for the at-risk population. Starting with the perceptibility of HH, the secondary research indicated that Italian women with low levels of educational attainment need better systems and

available technologies to understand their risks. This echoes the doctors' comments, who highlighted the importance of SD interventions that emphasize preventative behaviors and early symptom identification.

A key insight gathered from respondents was that HH was only a matter of concern when symptoms (such as strong chest pain) were felt. Unfortunately, as the secondary research points out, HH symptoms are difficult to diagnose, creating a gap in risk awareness and preventative behaviors. Similarly, respondents indicated of a common but incorrect assumption that HH is age specific, a distant worry for many of the responding women. Since the symptoms are not as acute as other diseases, there is a tendency to postpone appointments and exams. This dismissive behavior makes prevention efforts and discovery of CVD more difficult by medical professionals. Even once diagnosed, there is an unfortunate apathy and lack of motivation to change behaviors; a number of women respondents expressed a 'helplessness' over their health conditions, see Appendix B Survey 1. Getting diagnosed with CVD seemed almost expected as a result of aging. As a result, a SD intervention should be aimed at visualizing and evidencing the risk of HH early on, while promoting preventative lifestyle behaviors as a corrective measure.

The usage of health trackers was a valuable insight from both the doctors' perspectives and the utility perceived by users within the target group, seen in Appendix B Survey 2. Overall, evidence indicated in favor of increasing access to technological devices that not only track health but primarily increase awareness and preventative lifestyle behaviors as part of a tailored approach.

Another insight was that regarding the dietary patterns, although there is numerous research that indicates high adherence of the MED diet in Italy and especially among women, this relationship decreases with education level. Benedetti et al. evidences this, "among the socio-economic characteristics the level of education proved to be a strong predictor of the MED dietary pattern, in fact the more the number of years of education, the higher the level of adherence to MD" (2016, p. 439). As such, the SD system should consider dietary services as a preventative lifestyle behavior, reinforcing guidelines and healthy food habits, as supported by Dr. Toldo and Dr. Abbate.

Findings about the healthcare system were positive overall, whereas negatives tended to focus on the bureaucracy in the Italian healthcare system, such as long waits and rushed doctor visits. This led to some women who responded to practice self-medication and monitoring, ignoring the symptoms, visiting pharmacies or other trusted medical sources. Furthermore, those respondents who felt healthy simply reported not visiting a doctor, as the medical system is often viewed as an emergency only tool, rather than a preventative support structure. Additionally, complaints from women respondents revolved around the doctor-patient relationship which was caused by an inability to properly express symptoms and feelings, a quick diagnosis without a long-term plan and the standoffish behavior of many medical professionals. One comment, (participant 59, Survey 1) indicated that fortunately they never went to the doctor, implying that feeling healthy warranted no checkups or need for evaluation. Overall, given the lack of interaction with medical professionals, women respondents indicated they are not guided to make early preventative behavior changes. This doctor-patient relationship challenges provides the groundwork for a SD intervention given the impending doctor shortage and developing telehealth services.

In terms of socialization and openness about HH, an insight was that women participants discussed with friends and certain family members when feeling unwell. This informal network served as a first checkup and diagnostic tool. This type of conversation however is quite unstructured and varies from individual to individual, with some women simply never talking about health to others. SD can be leveraged to use the women's behaviors and relationships to promote HH habits (Christakis, 2010).

In summation, the primary research dove deeper into the empathy process and data gathering described in the HCD and DT methodologies seen in Figures 2, 3 and 4. This understanding, once synthesized and distilled into a set of workable insights, will help lead the SD process to structure problem framing and ideation (Stickdorn et al., 2018). In the next section, the research will look at current SD examples to understand how other approaches tackled the insights discovered thus far.

5. Case Studies

Part of the SD methodology as well as approaches from DT and HCD stress the importance of exploring existing service solutions and market examples for both inspiration, lessons learned and insights (IDEO, 2015; Moritz, 2009; Stickdorn et al., 2018). While the case studies do not directly overlap with the target identified prior, as an aggregate, they can help point out potential opportunities for improvement, gaps yet to be addressed and a variety of approaches for problem solving. As there are a variety of digital tools and services available today that aim to help people live more heart healthy lives by creating awareness or by supporting lifestyle shifts, it is important to analyze their individual offerings. In discussing the various approaches to HH, the examples will focus on service interventions or technological-service interventions and how the impacts of those changed the outcomes of CVD or healthcare delivery.

Service Case Studies

Exploring service system interventions can help to understand how other organizations and programs have approached the problem of HH through the lens of service design and how these stakeholders tackled various aspects of CVD risk. Understanding these models, the impact of the proposals and the lessons gathered from these efforts helps create frameworks for successful implementations as well as avoiding failures. As expressed in the secondary research, there is a benefit to see how early detection services work, given that, "At the population level, prevention interventions yield large benefits for relatively limited investment, demonstrating cost-effectiveness" (Reddy et al., 2016, p.12). Furthermore, exploring service case studies shows how behavioral shifts can come about with changes in interactions, information and traditional healthcare structures (Patrício et al., 2019). As highlighted during the primary research by Dr. Farina and Abbate, the effort for better HH starts with awareness. The service system examples selected approach HH from policymaking, the funding of community projects, conducting studies and setting public health guidelines (Will & Loo, 2008). With case studies, several of these interventions will be discussed to show promising areas of approach.

Go Red for Women Match

In 2012, the AHA under their subprogram Go Red for Women launched *Match,* a free online program that enabled women to be paired together to discuss heart disease. The program was open to women who wanted to improve their HH or to be better trained as caregivers for someone suffering from CVD. *Match* enabled women to create supportive relationships with other women to share common experiences and to motivate each other on staying healthy. Participating women would visit the *Match* website, create a profile and share contact information. Once a suitable and similar match was found by the algorithm, both participants were notified. Once the service matched participants, they were free to talk about anything related to HH or other health topics. Dr. Prerana Manohar emphasized the utility for other women to have a network where others can relate to similar cardiovascular circumstances without the formality of a medical setting (Arslanian-Engoren et al., 2015). Although the program itself was unstructured in terms of conversations, the success was in matching people with similar circumstances together. The impact of the program was promising with, "75% of the responders reported the following improvements in heart-healthy behaviors: eating a more heart-healthy diet (54%), exercising more frequently (53%), losing weight (47%), and quitting smoking (10%)" (Arslanian-Engoren et al., 2015, Results). This service indicates the importance of a peer support network, the benefit of accountability and sharing experiences is crucial when trying to alter lifestyle behaviors. Takeaways from this service are conversation as a key to enable lifestyle changes and an online portal as a mediator and aggregating point for women.

CDC WISEWomen & Million Hearts

The Center for Disease Control and Prevention (CDC) has led several service initiatives to reduce CVD nationally, with two notable service programs being *WISEWomen* and the *Million Hearts* initiative. Started in 2008, the *WISEWomen* program is designed to increase heart health checkups and to promote positive lifestyle cardiovascular related behaviors. Will and Loo discuss the programs objective which was: "Aimed at reducing the risk of heart disease, stroke, and other chronic diseases, *WISEWomen* provides screening for high blood pressure, hypercholesterolemia, and abnormal glucose levels and interventions to help women eat more healthfully, increase physical activity, and quit smoking" (2008, p. 1). This screening program was provided for free to low income communities, uninsured women and underinsured women. The program was broken up into three phases, with phase I focusing on research, phase II on extensive screening and phase III on specific demographic targeting and increased behavioral counseling. The program worked with participating states and organizations to deliver care to these underserved communities by providing funding, guidelines and a templated intervention program. The goal reported by Will and Loo was to:

> Maximize the number of women who receive program services (e.g., screening, lifestyle interventions, referral, follow-up). Target geographic areas...with the highest death rates and hospital discharge rates for heart disease and stroke. Deliver effective behavioral counseling... Tailor lifestyle interventions according to degrees of risk for heart disease" (2008, p. 2).

Apart from the preventative screenings in high risk communities, *WISEWomen* implemented the following strategies as part of the program: Instructing and educating medical professionals to guide at home blood pressure measurements for patients, providing training and educational material to women to improve their diet and physical activity, increasing the accessibility to proper nutrition and support services. The success of *WISEWomen* with its specific targeting of at-risk communities and its multi layered approach to address behavioral lifestyle habits provides lessons for new services. Specifically, the impact measured in phase II showed promising preventive results with the "screening [of] 2500 women annually and ensuring that 75% of screened participants began the lifestyle intervention, that 60% of women starting the intervention completed it, that 75% of women screened were rescreened within 10–14 months" (Will & Loo, 2008, p. 2). Between the years 2008 and 2013 the program was offered for roughly 150,000 women in the US (Will & Loo, 2008).

A takeaway from this initiative is the power of lifestyle coaching and the attention towards vulnerable communities. By selecting a specific demographic, this service initiative was able to concentrate its efforts and offer a tailored approach, a supported statement as seen by Reddy et al. in the discussion of policy implications (2016).

In 2012 *Million Hearts* was launched as a nationwide service system to tackle CVD through the funding of research, influencing public health policy making and providing medical professionals frameworks for actions. *Million Hearts* works by utilizing scientific research as the basis for topic prioritization, the creation of clinical tools and creating strategic partnerships for the optimization of care. In its current phase, the initiative aims to improve the public's health by reducing tobacco usage, reducing sodium, optimize care by pushing for heart healthy behaviors and to prioritize at risk populations (Kottke & Horst, 2019). For medical professionals, the service created goals and support structures to promote cardiac rehabilitation, control rates of hypertension among patients, guide the implementation of increased clinical care and support at home blood pressure monitoring. All these efforts were combined to achieve the metric: to prevent one million heart attacks and strokes within a five-year period. As expressed in Kottke and Horst:

> Achieving goals like those of *Million Hearts* is critical...by a healthy diet, adequate physical activity, weight control, and abstinence from tobacco and nicotine, and through pharmacologic treatment of hypertension...achieving all behavioral and risk factor targets could prevent or postpone more than 50% of all deaths in the middle-aged US population (2019, p. 103).

Utilizing both a clear quantitative measurement and multi-faceted preventative approach, *Million Hearts* offers a clear guide for successful management of CVD. Takeaways from the *Million Hearts* service initiative is the importance of having a service system that supports both individuals and medical professionals in the pursuit of better heart health.

COF Walking Program

Started in 2016, the Circle of Friends Program was a HH peer support and motivational initiative by Health Freedom, a nonprofit with the goal of training community health advocates and to encourage positive lifestyle behaviors such as physical activity. The six-week program clustered participants around a volunteer health advocate who provided information about healthy eating and exercise through a historical narrative (Sanders et al., 2020). Participants were engaged to participate by following a storytelling inspired program that emphasized personal reflection, goal setting, rewards and peer accountability. Tools used in this service included a recording journal and a manual that complemented the participants progress with historical metaphors. The study also notes that, "Each week, participants meet with their conductor and other members of their group for health activities, to report progress from the prior week and collect data about health indicators (e.g. blood pressure)" (Sanders et al., 2020, p. 109). Takeaways from this service initiative is that peer and group accountability in conjunction with non-medical health volunteers facilitated the discussion and helped enact behavioral changes. Furthermore, the usage of tools to track progress in the implementation of lifestyle changes helps with self-accountability and adherence to new changes. The usage of self-reflection and goals offers a promising avenue when trying to reach users with SD (Arnett et al., 2019; Avanzini et al., 2016).

CHAP

Launched in 2006, the Cardiovascular Health Awareness Program (*CHAP*) was a trial program that aimed at using trained health volunteers to assist local community organizations to implement an increased screening for CVD risk. The service included measuring participant's blood pressure, distributing heart health education materials and hosting CVD risk assessment sessions utilizing local pharmacies as meeting points. The goal of the program was to evaluate if informal non-medical professionals could become community health advocates to disseminate information and act as an early prevention network. Additionally, the program aimed at implementing data collection to better understand population health. *CHAP* recruited and trained volunteers by leveraging the existing organization's volunteer bases, through advertising and promoting the service in local media and by giving recruiting presentations. Volunteers who were selected then were "trained according to a standardized curriculum developed by a public health nurse and delivered by nurses working in each intervention community" (Kaczorowski et al., 2011, p. 3). The target of this preventative effort was for the elderly community, who were contacted through their GP or pharmacist.

The impact of the service towards the betterment of heart health was measured with the, "Detection and treatment of previously undiagnosed, severe hypertension...improved adherence to guidelines for detection and treatment of CVD...improved adherence of drug treatment or lifestyle changes by older adults in the *CHAP* communities" (Kaczorowski et al., 2011, p. 6). Takeaways from this service include the pharmacy as a primary touchpoint, a point repeated by in Survey 1 and a supported by Damiani et al. (2011). Another lesson from *CHAP* was the use of non-medical professionals to administer health advice, a finding that echoes the urgent needs of the Italian healthcare system (Pini, 2018). Lastly, the service initiative highlights that initiatives outside the traditional healthcare system might offer comparative results to lifestyle advice typically administered by GP's (Kaczorowski et al., 2011). The service initiative also measured a significant reduction in the rates of hospital admissions for CVD, a promising result that supports the premise of service system interventions.

Vivi Con il Cuore

Vivi con il Cuore translates from Italian to Live with the Heart, an awareness campaign initiative launched by Abbot, a medical device company and promoted by the Italian Society of Cardiology. The objective of the digital publicity campaign is to increase knowledge of heart diseases and to encourage women to adopt heart saving behavioral lifestyle strategies (Gamondi, 2019). The campaign focuses on providing information about HH, symptoms, online suggestions for better lifestyles and risk testing through a website. The website also features a list of ten questions to ask doctors related to CVD, enabling women to maximize the most out of their medical visits. This is supported by the primary research where doctor-patient relationships were a topic of discussion in Survey 1 responses. Live with the Heart produced several campaign advertisements and recruited female celebrities for visibility on the issue. Unfortunately, there is not sufficient information to understand the impact of this public health campaign. Some of the strategies and lessons from Live with the Heart are also oriented to policymakers and medical professionals, indicating the need to screen more heavily for CVD related flags early on and to close the gender gap with legislative measures. Gamondi reported that the Regional Councilor for Welfare of Lombardy, mentioned the importance of the program which increased prevention and focused on the theme of gender gaps, a direction of focus for the municipality (2019). This problem was also highlighted by the Aspen Institute Italia (2016) and by Damiani et al. (2011).

From this service case study, key takeaways are the focus on the early detection through awareness and patient empowerment. A statement also suggested by Damiani et al. (2011). Women also need empathy for their contextual circumstances and a tailored intervention approaches that consider the peculiarities of how HH manifests physiologically (Orthmann, 2019; WHO, 2017).

Banca del Cuore

Banca del Coure translates to Bank of the Heart, is an initiative started in 2015 from the Italian National Cardiovascular Prevention campaign that allows citizens to access a digital archive of their electrocardiogram (ECG). This initiative is the first large permanent national register of ECG and cardiovascular health data which is provided for free and is publicly accessible. In 2017, the program introduced a screening truck which would tour Italian cities and give citizens the ability to check their HH by participating in a quick and free diagnostic exam. Post screening, participants who took a diagnostic read were given a small card which contains guidelines on how to better take care of their heart. At this point, participants also have access to the digital registry where they, or their medical professional, can find their ECG. The director of the Cardiology department for the Hospital of Catania mentioned the importance of the screening truck initiative, as it was able to get in front of people who would otherwise not go to a doctor or hospital (D'Aria, 2017). This outreach though accessibility is also echoed by the *CHAP* program mentioned earlier (Kaczorowski et al., 2011). By reaching popular aggregation spots, Bank of the Heart had a strong impact on the education and data collection, a crucial step towards the prevention of CVD.

Measuring the impact, the screening truck initiative and tour reached over thirty cities, involving and measuring fourteen thousand citizens. Contributors to the program included 270 cardiologists and 127 nurses; this effort contributed to a total of about 170 days of awareness campaigning and health measuring throughout Italian cities (Banca del Cuore., 2020). Although the program relies on nearly 400 medical professionals, the ratio of patients to medics is close to a single medical professional conducting 35 examinations. Apart from measuring and collecting data, *Banca del Cuore* also identified at risk individuals, with 231 cases of abnormal cardiovascular health within individuals who had no prior knowledge of being at risk (D'Aria, 2017). From this case study, there are several takeaways to the power of preventative screening, accessible care and the usefulness of metrics. These findings are supported by the comments of Volgman (2019) and by the WHO (2019).

Technological Case Studies

Following the SD methodology, it is important to recognize potential touchpoints and systems of interaction involved in delivering a service-based solution (Patrício et al., 2011; Shostack, 1984). Digital products can be leveraged to transmit information, increase awareness, monitor changes, connect individuals and identify various factors that are related to HH, a statement supported by Dr. Farina and Dr. Abbate's comments on wearable devices. Reiterating this point Reddy et al. stated:

> Digital technologies offer a scalable and cost-effective route to increase public awareness and change perceptions about CHD prevention. The initial challenge lies in making individuals aware of the risks… then to empower people to take control practically and psychologically by simple lifestyle choices (2016, p. 26).

SD thinking however does not only rely on technological innovation to deliver new services (Stickdorn et al., 2018; Volgman, 2019). Rather the SD approach is to use relevant channels, in this case digital tools, to achieve an objective. Technological innovation undoubtedly has a variety of benefits to the implementation of services. As such, the selected examples will showcase how SD can be leveraged through the usage of digital tools for the reduction of CVD, increasing awareness of symptoms and empowering users to take care of their own health.

Retinal Images and Deep Learning

Smartphones are constantly upgrading with more advanced hardware and software, allowing medical professionals and users to leverage this technology for use in early detection of CVD and prevention. One technology that has been leveraged recently is the usage of high-quality cameras available on most smartphones (Poplin et al., 2018). Researchers recently announced a new breakthrough by leveraging deep learning models and smartphone cameras as a diagnostic tool for a range of HH related diseases. Poplin et al., states that "Using deep-learning models...we predicted cardiovascular risk factors not previously thought to be present or quantifiable in retinal images, such as age...gender...smoking status...systolic blood pressure...and major adverse cardiac events" (2018, p. 158). This research showcases that with the advances in technology, new service and systems can be created, a statement supported by Patrício et al. (2011). The implications for this technology include population health initiatives, faster screening services and a greater independence from the traditional medical system (Poplin et al., 2018).

Apple Watch

As a wearable device, the Apple Watch is a digital tool with similar capabilities as a smartphone with the addition of health tracking and measuring hardware. With the use of a built in ECG, the watch offers users the ability to measure their heartbeat, detect irregular heart rhythms and download this information to their phone (Baig, 2020). As a new technology-service initiative, Baig reported that the Apple Watch was being tested as a population health initiative, with incentives such as "some study participants can earn $150 or more, based on a points system tied to the activities you are asked to complete, such as answering surveys or meeting other goals" (2020). Baig publicized Apple's chief operating officer statement that, "There's tens of millions of watches on people's wrists as a huge responsibility. And we have a commitment to not only do this early detection but…make sure that early detection is delivering the right kind of outcomes" (2020).

A takeaway from the implementation of the Apple Watch as a technologically based service is the accessibility of care and measuring devices for the general public. By removing the knowledge and price barriers, this service allows non-medically trained individuals to understand key markers of their health, a statement supported by Dr. Farina, Dr. Abbate and Dr. Toldo in the primary research.

FibriCheck

Founded in 2014, using the smartphone flashlight and camera in conjunction with image detection software Fibricheck is an app that measures changes in the blood vessel in a user's finger, mimicking a photophletysmogram diagnostic device (Mortelmans et al., 2017). This service works by capturing the users blood vessel data and translating that into usable and visual data for the user. This is an approach supported by Raghu et al. whose work on the CVD risk projection meter also showed that complicated information could be distilled to users with lower levels of educational attainment (2015). "FibriCheck is an accessible standalone smartphone application that showed promising results for AF detection in a primary care convenience sample" (Mortelmans et al., 2017, p. iii16).

In summation, FibriCheck showcases how technological innovations can turn into service innovations in the delivery of care with the potential of remote care, a point expressed as a promising medical development by Dr. Johnson.

Takeaways

Many of these case studies illustrate how SD can close the gap for health care for Italian women with low levels of educational attainment. Some of the example showcased are free to the users (D'Aria, 2017; Gamondi, 2019). The problem with most of them however is that they seem to attract audiences which are already engaged in actively managing their health (Christakis, 2010; Will & Loo, 2008). They often fail to reach the individuals at risk of heart disease who might otherwise be unaware. Another problem is that shifting behavior is just genuinely hard (Arslanian-Engoren et al., 2015; Eckel et al., 2014). As evidenced in the primary research through Dr. Toldo's comments, even for people who have already been diagnosed with heart issues making the necessary lifestyle adjustments and sticking with them as a form of secondary prevention can be extremely difficult.

Given the challenge of implementing lifestyle changes, technological solutions offer a promising offering for the distribution of information and the evaluation of health (Raghu et al., 2015; Reddy et al., 2016). In supporting this statement, Nes et al. give a most persuasive account for the usage of health devices, as stated:

> With multiple wearable devices and Web based applications, it is now much easier to self-monitor physical activity than it was a decade ago. In [personalized activity intelligence], one could use an algorithm integrated into a health app or wearable device that measures heart rate continuously, and potentially made available to the general public worldwide, allowing individuals across the world to track their activity levels using a single, easily understandable metric (2017, p. 332-333).

From the insights gathered by the technological-service case studies and the service case studies, there are clear areas of focus that could help in the delivery of better HH for Italian women with low levels of educational attainment. As a start, a government sponsored approach that shifts the care from the medical system to volunteer groups or even self-care had promising results in the *CHAP*, *COF* and *WISEWoman* program. The implementation of goals, fast measuring of HH and the dissemination of information helped empower women to make preventative lifestyle changes. Lastly, community support for lifestyle changes indicate that socio-cultural factor plays a large role in preventative behaviors, an observation discovered in the WHO report (2019). The next section of the research will bring together all the learning and insights discovered thus far into an organized and workable set of knowledge which will be the catalyst for ideation and service system development (Stickdorn et al., 2018).

6. Synthesis

Following the secondary research, the primary research and the case studies, the synthesis section begins to analyze and sort all the data, insights and observations discovered into a workable set of tools for ideation (Gibbons, 2017). When designing a complex service system, like for the innovation of healthcare services, sorting the information helps to understand common themes, user attitudes, feelings and system challenges in a digestible and actionable manner (Patrício et al., 2011). Within the DT process, this is the culmination of the discovery phase as illustrated in Figure 1 and the first step within Figure 2. HCD's process also emphasizes the importance of this foundation as demonstrated in Figure 4, with the peak of the curve and the diverging process.

The purpose of this section is to use the data, insights and understanding gathered thus far to populate tools that serve to the discovery of intervention opportunities, the framing of the problem and the eventual ideation and development of the service system (Altman et al., 2018). Using tools from SD, DT and HCD the data will first be used to construct a persona and a user journey map, which showcases the target audience and their interactions within the system. From these insights, other design tools and exercises are used to reach the ideation phase (Stickdorn et al., 2018).

Personas

When following the SD methodology and the philosophies of DT and HCD, it is important to empathize with the users and to understand key issues that drive them (Dam & Siang, n.d.-a; Moritz, 2009; IDEO, 2015). Personas are a, "tool and methods that could be used in SD explaining" (Mortiz, 2009, p. 143), that illustrate the ideal customer, the current behaviors, characteristics, attitudes and feelings. Personas are fictional characters, created as an aggregate from all the various insights gathered in the secondary and primary research (Holeman & Kane, 2020; Stickdorn et al., 2018). Personas reflect the larger population and are helpful when trying to design for a target audience by making goals and needs evident (Patrício et al., 2019). From Moritz in "SD understanding" (2009, p. 126), personas are typically formed with demographic information (e.g. age, gender, occupation, etc.) and qualitative insights (e.g. motivations, quotes, attitudes, about, context, etc.). For the context of HH and Italy, the personas included: the familiarity with technology, the inherent risk towards CVD, the level of physical activity, existing stress levels and adherence to the MED diet. All these components reflect the main dimensions discovered in the secondary research.

The first persona seen in Figure 15, reflected a younger Italian woman with low levels of educational attainment who is unaware of HH risks but erroneously believes is leading a healthy lifestyle. This persona builds off the responses received in Survey 2 and the cultural probes, where participants could identify some symptoms related to HH, were aware of the proper preventative behaviors but did not implement these guidelines into their own lifestyle. Additionally, if participants were tracking their health, some used incorrect metrics to judge their health, a characteristic included in Figure 15. From Figure 12, respondents included the care of others, an extra burden included in the development of the first persona. Overall, this first persona resembles a person who trusts the medical system but underutilizes its resources, leading to the delayed symptoms and gaps in outcomes observed by Damiani et al. (2011).

The second persona seen in Figure 16 was constructed to be emblematic of the Italian woman with low levels of educational attainment who has too many responsibilities, a lack of self-care time and a general disinterest towards the health system. One aspect from this persona that is important is that they feel jaded by the medical system, a response observed frequently in Survey 1. This persona included fatalistic responses received from Survey 1; such as an apathy for change, a resignation for disease and a misunderstanding of HH risks (Participant 41, 42, 57). This is supported by the secondary research from the WHO (2019) that states that underserved individuals feel ignored by the system and by observations by Gale et al. (2011) in peoples reluctance to take CVD medication even when advised by doctors.

Figure 14. First Person

Marta Cassano
Age 55 - Lampugnano, Italia
High School Education
Married & Housewife

"I don't know much about HH, I eat healthy so I'm probably not at risk for CVD. I only go to get a checkup if I'm feeling really sick..."

Risk of CVD — **HIGH**
Physical Activity
Diet Adherence
Level of Stress
Tech Knowledge

Attitude
Thinks is immune to CVD risk and fears other health issues like tumors or Alzheimer's

Current Context
Has housework and errands to run that keep busy during the day, while her husband works

Medical Knowledge
For Marta, staying at a specific weight equates to good health. She uses a digital scale to keep track, Following the Mediterranean diet is a good way to stay healthy. Occassionally gets HH information from other family members, friends or sees content on social media

About
Marta spends her days doing household chores, spending time with her friends and with her husband. For her, sipping wine after a long days work is the ideal way to relax, especially in her terrace. She uses social media and shares many pictures with her groups. Marta's guilty pleasure is eating her homemade sweets

Perception of Healthcare
Marta trusts highly doctors but thinks she can handle her own health, listening to her body. Marta sees doctors for emergency situations; most problems are temporary and will pass. She does checkups infrequently and although they give her advice to exercise, she rarely has the motivation to do something about it given that she is at a good weight

Figure 15. Second Persona

Ester Novello
Age 64 - Bergamo, Italia
High School Diploma
Divorced & Works at a carpet repair shop

"At my age, I don't have a lot of control over my HH. I'll take medicine if needed but I'm resigned to make any changes"

Risk of CVD — **HIGH**
Physical Activity
Diet Adherence
Level of Stress
Tech Knowledge

Attitude
Feels apathetic, highly stressed and tired. Lack of energy is demotivating

Current Context
Feels overwhelmed from responsibilities, with little time for self care. Permits herself to smoke a few cigarettes. Uses over the counter solutions to mask symptoms

Medical Knowledge
Knows she is at risk of CVD since she smokes, however dosen't think the risk is so high given that she has never experienced chest pain. Thinks that if an incident happens, she will recognize it

About
Ester has been divorced for many years, as such she is independent. This gives her many evenings to socialize with friends and to often go out. Her friends are her support group although she rarely talks about health, besides being tired. Used to do tennis when she was much younger but discontinued the sport after an injury. Since then, she is sedentary. She eats fairly healthy and knows to reduce sodium

Perception of Healthcare
No longer goes to doctor in oder to avoid confrontation about health. When she used to do checkups, she disliked the wait times and the briskness of the visits. Felt rushed in and out without proper comprehension

In summary, the personas help synthesize all the feeling and emotions from the survey respondents in the primary research into concise characters to spark ideation. These two personas exemplify the various observed challenges, opportunities and patterns among Italian women with low levels of educational attainment. To recreate the existing context and to understand all the processes that where a SD intervention could be best served, the User Journey Maps are to progress the ideation.

User Journey Map

When developing a considered service system, the journey map is a diagrammatic summarizing tool that helps to visualize the current paths and interactions of personas (Patrício et al., 2011; [Service Design Tools], n.d.). As a tool, the journey map can be used to describe current systems or to show a proposed solution (Stickdorn et al., 2018). As described by *Healthcare Customer Journey Mapping*, the User Journey Map:

> Provides a holistic and graphical overview of the various touch points a customer has with a product or service. It pinpoints potential user experience, security and reliability issues; in addition to identifying the factors at each touch point that may lead to a positive or negative experience (2018, para. 5)

For reference to the User Journey Map, see Appendix A Illustration 2, which visualizes the current experiences. From the secondary research, the evidence points to different moments in time within the users lifetime where preventative measures and behaviors can be introduced (Arnett et al., 2019; Reddy et al., 2016). As such, the user journey for Italian women with low levels of educational attainment is divided into three main sections: the person being unaware of risk or symptoms, becoming aware of being at risk or alternatively developing CVD and then establishing new habits or failing to change. Also when mapping the emotional journey of the personas, two different pathways were created, depending on the success of the traditional healthcare system. The positive journey showcases the delayed and expensive but successful treatment of CVD whereas the negative journey illustrates the healthcare system unable to provide proper guidance for lifestyle changes.

In the unaware section, the users are typically not familiar with the symptomology of CVD and as such are inexperienced or unable to recognize health changes (Orthmann, 2019). Furthermore, given the delayed and slow showing nature of heart disease, many women are typically not cognizant of the risks (Giardina, 2000). From the primary research, almost three out of four women were caretakers for another individual's health, Figure 12, which echoes research from Orthmann (2019) and Tintori (2015), who stated the caretaking role of women as a problematic burden on their lives. In Italy, some women use the wrong metrics to determine their own health, relating weight as the primary indicator of health. This can lead to a misunderstanding of what healthy entails, thus affecting eating and exercise habits (Eckel et al., 2014). From the secondary research (Erhardt, 2009; Lugo et al., 2017) and with insights from Survey 1 and 2, an unfortunately high proportion of women who responded smoke while aware of the dangerous effects and the contribution to increase CVD risks. However, that danger is seen as a distant health problem or almost fatalist in nature, with some responses indicating an apathy towards this HH risk, as evidenced in Survey 1 (Giardina, 2000). This is experience, first evidenced in the second persona, see Figure 15 for reference, is repeated in the thinking portion of the unaware section, where the personas are living with unhealthy habits. In terms of symptoms, from the primary research, a significant proportion of the women surveyed could not properly identify poor HH warning signs (Gamondi, 2019), see Figure 13. A similar proportion of the responses from the survey indicated a general feeling that women were not at higher risk and did not believe they were susceptible to heart disease until much older, echoing data from Gamondi (2019).

In the aware section of the User Journey Map, our personas finally realize that they are at risk for CVD and have developed poor heart health by ignoring preventative lifestyle behaviors. Observations from the prior data collected, see Survey 1, indicated that conversations about health are infrequent and are usually triggered by symptoms or a medical event. Many women are hesitant to talk with their families about health to not worry them; primarily relying on friends to get advice and support. Despite the he healthcare system in Italy being free and guaranteeing healthcare for almost everyone (Damiani et al., 2011; Teso et al., 2013), it is rendered frustrating and inefficient due to a bureaucratic system, as reported by respondents in Survey 1. Private options exist but women reported instead going to the pharmacy or attending blood donation events as they would double as a screening service. Pharmacies

acts as a point of information and early symptom detection according to Survey 1 responses. The assumption being that pharmacies act as a middle level of information whereas doctors are useful for more severe or chronic conditions. Blood screening services and events are also favored due to their speed and efficiency. This echoes the reported success of the *Banca del Cuore* service intervention case study (2020) and the responses from Survey 1.

From surveys, some women reported negative experiences and are distrustful of doctors. A portion of survey respondents found their doctors too busy, distracted or detached. Secondary research shows this is likely a result from the overburdened healthcare system (Pini, 2018). This results in short visits and a lack of personal attention, a problem when trying to instill the values of preventative lifestyle behaviors. For the respondents who had positive relationships with their GP and specialists, comments included an aspect of luck and randomness. Out of the many people interviewed in the first survey, few mentioned having a preventative conversation about CVD risks with their doctor, exemplifying the modern problem of healthcare as a treatment rather than early corrective interventions (Mozaffarian, 2016; Lichtenstein et al., 2006). This relationship dynamic drastically alters the subsequent steps and adherence to lifestyle recommendations within the User Journey Map.

In the new habits or treatment phase of the User Journey Map, this section signifies the action stage of the persona where preventative lifestyle behaviors are implemented or abandoned. The adoption of changes depends on the relationship with healthcare, stress factors, time limitations, social and environmental context and knowledge of the risks and the perceived ability to make changes—a response collected in Survey 1 (Benedetti et al., 2016; Dar et al., 2019; Tintori, 2015; WHO, 2019).

As part of the treatment phase, when CVD symptoms are recognized by medical professionals, medication is used as part of a larger care plan (Arnett et al., 2019). An unfortunate reality is that many women surveyed indicate simply relying on medication to suppress conditions related to poor heart health. While medication can in some cases help manage developing problems, inevitably, pharmaceutical approaches alone are not sufficient, "This may be the result of a culturally-informed assumption that medicine primarily has a curative role" (Gale, 2011, p. 8). Lifestyle changes and recognition of risk is still important (Musumeci, 2016). Observed barriers to the implementation of positive lifestyle habits are the time constraints, availability of health services, the medical system not incentivizing preventative care, and the existing social context as a result of policy (Arnett et al., 2019; Dontas et al., 2007; "Stepping into Healthier Communities," 2017; Will & Loo, 2008).

Another insight gathered is that chronic diseases are not well understood. Since combatting CVD takes time and continuity, often once an individual gets better, they pre-maturely discontinue the habit changes and return to their regular pre-symptom life, a statement supported by Dr. Toldo's comments. This incorrect assumption is the misconception that somehow CVD can be cured, while the approach is more of a continuous and active measuring and management.

An observation from the primary research is that chores and responsibilities as a caretaker interfere in establishing new routines, as evidenced in Survey 1 responses. This is particularly more difficult for Italian women who are in a traditional gender role within the family, occupied with the care of others, as seen in Survey 2 and repeated by remarks in Tintori (2015). Lacking an accountability and support network, women are discouraged to continue a new routine that supports a healthy heart.

In summation, the User Journey Map helped synthesize the personas journey through the existing system and helped identify areas of opportunity beyond the observations and takeaways listed in the secondary and primary research. Specifically, preventative measures and the introduction of positive lifestyle behaviors seems to have the most impact on subsequent actions. This observation overlaps with the research from Figure 6, from Reddy et al. (2016), on the policy priorities for HH. Similarly, the opportunities identified echo the future consideration from the *WISEWoman* project (Will & Loo, 2008). These new opportunities identified, once refined and sorted in the next chapter, will help in guiding the design of a service system intervention.

7. Opportunity Discovery

Using the Service Design (SD) methodology, after crafting the personas and user journey map, the process focuses on the discovery of opportunities, challenges and requirements for service interventions (Moritz, 2009; Stickdorn et al., 2018). In Appendix A Illustration 2, the User Journey Map, some initial opportunities were laid out. To expand on these opportunities and to further analyze areas where SD, DT and HCD can be valuable, a series of tools are used ([Service Design Tools], n.d.). This step within the DT process can be seen in Figure 1, the double diamond diagram, represented by the initial converging stages of the problem definition. Similarly, in Figure 2 this stage mimics the "define" stage at a high level. From HCD the opportunity discovery follows the IDEO process seen in Figure 4, with the converging during the beginning of the ideation phase. The objective of this process is to evaluate what opportunities are most auspicious to design for.

As-Is Scenario

In SD, laying out the context helps understand the constraints that must be worked with. Using "As-is" Scenario tool is beneficial to visualize and document the existing user flows, as they currently exist (IBM Studios, 2018). Unlike the User Journey Map, the "As-is" tool focuses on major category relationships for the users. This is a reductive process that synthesizes all the steps from the user journey into topics. An "As-is" scenario is constructed by a vertical axis with the user's thoughts, feelings and actions (IBM Studios, 2018). The horizontal axis is composed of the major opportunities and interactions the user experiences. The content is populated by insights gathered from the secondary research, responses form the primary research and general observations. The objective of this tool is to illustrate the persona's experiences within certain systems and the opportunities to improve. As an example, in Figure 16, the user's experience with Italian healthcare can be soiled by the doctor's bedside manner and system bureaucracy. This leads to the opportunity to create a better system for patient doctor communication as well as accessibility to medical professionals. Besides identifying opportunities, the "As-is" serves as a pre-brainstorming tool as it proposes various areas of interest that could be addressed through a service system.

From Figure 16, several opportunities are evidenced. In the relationship with healthcare, there becomes an apparent need to increase traditional and nontraditional health accessibility, change the doctor-patient dynamic and to increase early screening efforts. From the lifestyle category, there is the opportunity to improve users understanding of heart health markers and communicate what constitutes a healthy lifestyle as defined in the secondary research. Regarding HH, there is the opportunity to increase symptom awareness, shift the caretaking perspective and to leverage the relationship with health intermediaries. In summary, the "As-is" helped illustrate key areas where a service system solution could be implemented to reduce rates of CVD among Italian women with low levels of educational attainment.

Figure 16. As-Is Diagram

	Relationship with Healthcare	Lifestyle	Heart Health and CVD
Think	She only goes if she feel very sick or has clear symptoms, dosen't think she requires care if shes overall feeling good. Doctors are extremely qualified and are experts on the subject, however sometimes are condescending or curt in behavior	Relates body weight and feeling good to health; as such dosen't need to always exercise. Assumes is eating healthy. Think HH problems are a distant, age or genetic related issues	Thinks she isn't at risk of CVD. Suffers from optimism bias in relation to HH. Assumes CVD only happens to people who are particularly observing bad lifestyle choices. Thinks she would be able to recognize symptoms
Feel	Positive about the Italian healthcare system, knows she will recieve good care. However, there is some frustration going to doctors, given the occasional wait times and briskness of the visit. Occasionally feels like she isn't heard	Feels healthy because she eats a good diet, mostly follows the MED however is unsure to specifics	Stress from caring for others, family and responsablities. Feels often exhausted and out of breath after anything laborious. Avoids activities that seem too tiresome
Do	Do annual or semi annual checkup but depends on how busy she is. Otherwise prefers goign to screening campaigns and events since its easier	Occasionally walks with friends, socializes during the week. Considers that an active lifestyle, givent that she is outside of the house	Smoking 5 or so cigarettes a day is permissible. Medication usage is infrequent but helps to cover symptoms of poor HH. Occasionally will measure blood pressure at pharmacy

Issue Cards

Implementing SD thinking involves a careful analysis of the current context for the target population (Altman et al., 2018 ; Patrício et al., 2011). Tools that can be useful in summarizing all the various and interconnected contexts are issue cards (IDEO, 2015; [Service Design Tools], n.d.). Issue cards are typically index cards whereby the designer synthesizes the observations and challenges observed thus far into singular elements (Stickdorn et al., 2018). Their framework of the card's content is flexible depending on the topic; utilize an insight, a picture, a drawing, a keyword, a description, etc., ([Service Design Tools], n.d). Issue cards are different from other tools mentioned thus far as they focus on singular elements within a larger context. In the topic of HH and the target of Italian women, the cards were organized stating the large topics within HH in summarized accounts based on user experiences. The content was derived primarily from the primary research responses and personal observations of the research. Using issue cards helps to promote internal deliberation, to suggest new avenues of exploration, to structure thinking within a specific context and to spark ideas during the brainstorming stage. Figure 17 illustrates the settings for Italian women with low levels of educational attainment regarding health care and HH.

From Figure 17, several new opportunities can be identified such as the leveraging of the pharmacy as a service delivery touchpoint (Shostack, 1984), the utilization of social circles as an educational awareness tool (Christakis, 2010; Kaczorowski et al., 2011) and the ability to shift perception of health with technology. As a preliminary brainstorming tool, the issue cards highlight the need for non-traditional medical intervention approaches given the highlighted problems within the current system. In summation issue cards helped to understand that the target user struggles with the early stages of HH and that there are existing stakeholder relationships within their context that could be applied to a service system solution.

Figure 17. Issue Cards

Understanding the Symptoms	Symptom knowledge varies drastically. There are trends that point to benefits in active lifestyle and the correlation of correctly identifying symptoms. Some respondents conflate the male symptomlogy with the female one.	**Reliance on Medication**	Medication is seen as a solution to HH issues, whereas lifestyle changes are too difficult to implement. Reliance on pharmacological treatments is simpler than confronting the root cause.
Specifics of the MED diet	The Med diet is closely related to the prevention of CVD. As such, many Italian women simply assume they are eating healthy without a confrontation with health markers.	**Perception of Healthy**	Interviewed women report that if there are no negative symptoms, there is no need to concern oneself about HH. This is an indifference towards a proactive lifestyle. Understanding early symptoms and health markers is crucial to bring awareness.
The Role of the Pharmacy	The Italian pharmacy is a frequent touchpoint for women. Given the expertise of the pharmacist and the general accessibility, this resource becomes an early POI for concerns and health advice.	**Fatalist Approach**	Italian women responded that becoming unhealthy is normal and to be expected as one ages. This assumption leads to HH issues being percieved as a distant threat and a natural occurence with aging.
Social Circles	For Italian women respondents friends act as mediators and informal touchpoints for general HH. These groups are tight knit offering both potential lifestyle problems and positive behavior reinforcement.		

Emerging Themes

Themes are patterns observed in the secondary research, responses from the experts and participants from the primary research and personal observations derived from the scenarios related to the national healthcare system of Italy, technology and low educated women (IBM Studios, 2018; IDEO, 2015). They are connections between the individual elements in the system and allow for the development of deeper insights (Dam & Siang, n.d.-b). There is not a guiding format to emerging themes, simply recollecting observations and insights into trends can help in later design speculation (Moritz, 2009). In developing themes for Italian women with low levels of educational attainment, the topics were labeled according qualifiers such as if they were challenges within the existing system, gaps that needed to be addressed or overall observed patterns of data. The goal of using a theme approach to data organization is to analyze opportunities from another angle to those offered in the issue cards and "as-is" scenario. Furthermore, themes serve as a catalyst for ideation as they propose additional avenues of exploration for SD.

Figure 18. Themes Diagram
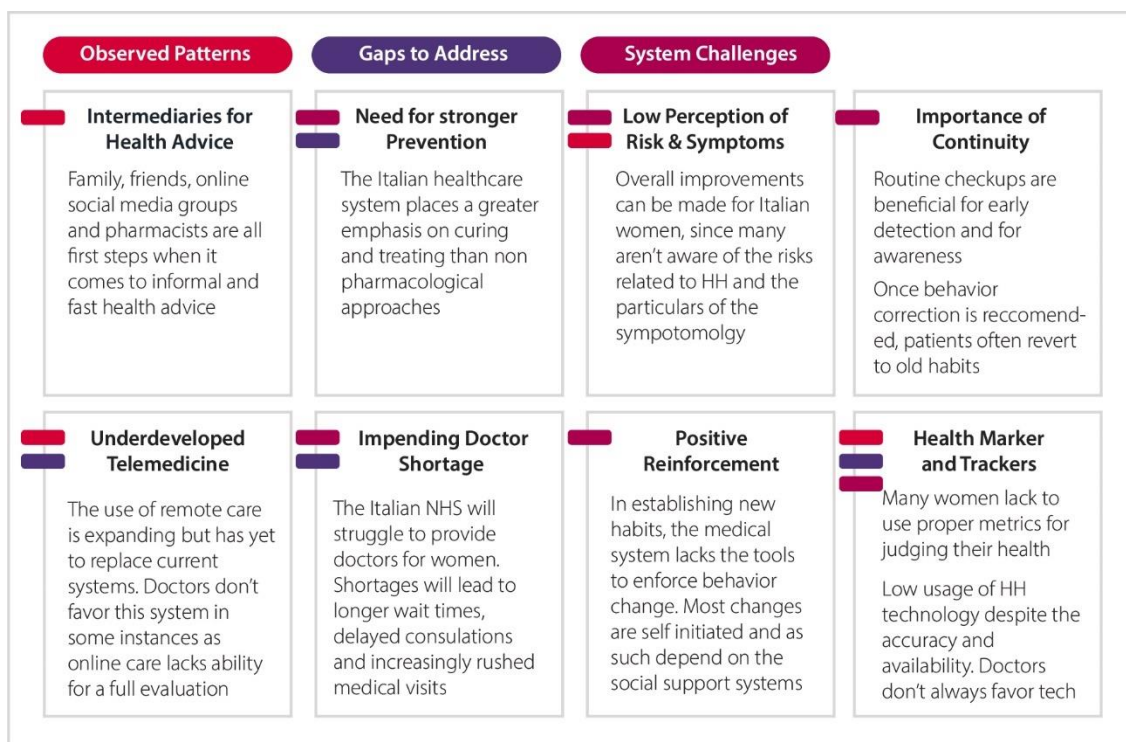
From the themes created in Figure 18, there are several opportunities that can be identified. The most promising for SD interventions are the low utilization of technological trackers despite evidence demonstrating their effectiveness and the lack of telemedicine services that could be used for early screening prevention. In summation, themes helped understand that there are many existing services and products that are underdeveloped in the field of HH.

Outlining the insights from the tools used in chapter 7, the main takeaways are that SD can be used to improve the outcomes of Italian women with low levels of educational attainment though a variety of angles. The "As-is" highlighted how service design could be used to reconceive the doctor and patient relationship outside the bounds of traditional models. The issue cards highlighted the potential usefulness of pharmacies as an intermediary for service interventions and the development of a network based HH service for the dissemination of awareness and as a social safety net. Finally, the themes demonstrated the importance of rethinking current service offerings so they can better meet the needs of the future.

8. Problem Framing

After discovering opportunities for SD based interventions, the next stage in the process revolves around problem framing. Problem framing shifts the research from the exploration on the topic of HH and Italian women with low levels of educational attainment to the identification of a singular area where a service system will be implemented (Moritz, 2009). This step is about synthesizing the information from chapters 6 and 7 into a set of problems that spark ideation. Problem framing is a concept present in DT as seen in Figure 1, where the central convergence of the double diamond leads to the problem definition. From HCD, this follows step mimics the middle of the ideation curve in Figure 4, where the apex is present, indicating the changing in focus. From the insights gathered, certain specifications of the service intervention are laid out to ensure the ideation meets the user's criteria. These criteria are outlined in the need statements and help frame the other tools used in chapter 8. With these requirements, problem framing also speculates about possible futures by asking "what if" or "how might we" questions (Dam & Siang, n.d.-b; IDEO, 2015). The goal of problem framing is to conclude with a single and clear "how might we" question, a term used as a provocative framework for the synthesis of the insights into a proposal (Heffernan, 2019; IDEO, 2015).

Needs Statements

Needs statements helps to formulate key components that should be considered when designing a solution (Dam & Siang, n.d.-b; IDEO, 2015). A need statement reflects the target user, Italian women with low levels of educational attainment, and what they need from a service system in order to bridge the gap in HH outcomes (Stickdorn et al., 2018). Generating these statements is important they align the prior research into a set of requirements and outlines prior to the generation of ideas (IBM Studios, 2018). Employing this process helps to synthesize the takeaways from the "As-is" scenarios, the issue cards and the emerging themes. Another aspect of the need statement is the implementation of qualitative metrics (Gibbons, 2019). This lets the designer know when the need has been met by stating aspects of the service implementation that should be considered. The framework for a need statement is usually a single sentence that places the user first, the need and the metric by which success is measured at the end (Gibbons, 2019).

From the need statements generated, seen in Figure 19, a sub selection was chosen indicating needs that best summarized the observations seen from chapter 6 and 7. Of those needs, there is a focus on providing a service intervention that shifts the access of care from the traditional healthcare setting to a more independent one. The reasoning behind those statements is observed in Appendix A Illustration 2, the User Journey Map, whereby the awareness of CVD is primarily detected only by medical professionals when symptomology is too severe. This iterates a key statement from Orthmann, (2019) that Italian women are accessing care with significant delays. The metric for this statement is the evaluation of HH independently, without assistance from the medical system. Further requirements generated by the needs statements focus on the emotive aspects of HH, whereby healthcare service solutions require compassion and understanding of the context in order to be effective. The metric for this statement hinges on the understanding of CVD risk by the user.

In summation, the need statements show that the service system needs to consider the user as an independent actor outside the traditional care system and that any intervention should be carefully tailored to the user's context. This is supported by the secondary research observations by Kaczorowski et al. (2011) study and Sanders et al. (2020) and Will and Loo, (2008) work on tailored interventions.

Figure 19. Need Statement Examples

What If

Using a "what if" statement is a tool used in SD to speculate for possible future scenarios or different modalities of thought, which can be positive or negative about the target and the surrounding context (Dam & Siang, n.d.-b; Stickdorn et al., 2018). These hypotheses are a response to the need statements developed earlier, where divergent thinking is used to ideate on possible contexts. Furthermore, the "what if" statements are derived from observations gathered in the primary research and the takeaways from the case studies. As a tool, this process follows the divergent thinking expressed in Figure 4. This serves as an early brainstorming that informs the direction of the "how might we" statement. To organize the various "what if", the scenarios are divided into four main categories of speculation. The first category relates to the awareness of CVD and HH. The second category reflects possible future options for delivering care. The third category speculates on the role of technology and advancements in telemedicine for HH. The last category reflects possible social changes in the approach to HH care.

From Figure 20, the outcomes of the "what if" exercise illustrate that a service solution could approach HH for the target through the increase of health accessibility. The statements point to the physicality in the service outcome, whereby a visualization of HH can be easily understood and accessed. An idea expressed also by Reddy et al. within the discussion of case studies (2016). Other ideas expressed relate to caretaking and community health being a possible service direction (Arslanian-Engoren et al., 2015).

In summary, the "what if" proposes various directions for the service system concept and begins the brainstorming phase with some high-level objectives. These all inform the "how might we" statement which is the apex of the research and the subsequent problem framing from prior chapters.

Figure 20. What If? Examples

Awareness		Care	Technology	Society
What if you could learn about HH from a health kit? ●	What if CVD symptoms could be displayed in a visible way? ●	What if Italian women had a medical bot to answer quick questions about HH?	What if online doctors could have immediate access to tests completed at home?	What if loved ones had the tools to track the health markers of those closest to them? ●
What if patients had the vocabulary and awareness to explain their symptoms better to their doctors?	What if there were ways to test for HH without even being aware?	What if there were prescriptions for exercise? How would it be fulfilled?	What if we could access care regardless of location or time? ●	What if individuals can become certified in HH care, similar to a CPR training?
What if there is no access to healthcare in the local community?	What if CVD risk can be represented in a physical object? ●	What if we had a health coach instead of a Dr. provided by the government?	What if the internet is unstable and doesn't allow everyone to get access to information?	What if we could consult a friend for medical advice and feedback?
What if you could get an instant read on your risk for CVD?		What if we didn't have to leave our houses to get healthcare? ●	What if women could see their heart health in the palm of their hands? ●	What if everyone could be a medical touchpoint? ●
What If all foods came with a HH rating system?		What if we could all have a nutritionist create our meals?		What if women had social HH support structures that catered to their particular needs?

Insights to How Might We

From the secondary and primary research through the synthesizing process in chapter 7 and chapter 8, the "how might we" is created. This question will guide the brainstorming and development as in the ideation phase described in Figures 1, 2 and 3 (Dam & Siang, n.d.-b; IDEO, 2015; Stickdorn et al., 2018). The "how might we" statement is a single phrase that is useful in DT and SD, "because it suggests that a solution is possible and because they offer you the chance to answer them in a variety of ways" (IDEO, 2015, p. 85). Figure 21 shows the final generated "how might we" which focuses on addressing preventative lifestyle behaviors by use of a service system and accompanying products. In summation, the "how might we" is used to guide the brainstorming stages and then serve as a litmus test for the idea development, ensuring that the user needs, context of themes and relevant issues are met with a service.

Figure 21. How Might We Statement

How Might We | Italian women with low levels of educational attainment with a preventative lifestyle service and products to empower better HH care for themselves and their loved ones given the future limitations of the healthcare system?

9. Ideation

Following the SD and DT process, the synthesis, the opportunity discovery and the problem framing led to the creation of the "how might we". This exhaustive process iterates the DT methodology in Figures 2 and 3, and the HCD approach in Figure 4, converging on a problem (Mortiz, 2009). The "how might we" created in the prior chapter, as a combination of all insights gathered, is a tool that will guide the ideation in the next stages. The purpose of the ideation stage is to diverge on the problem and to propose a variety of concepts, where quantity is the main objective (Stickdorn et al., 2018). As part of the process, involving users from the target audience will help strengthen the relevance and viability of the service ideas. From this, through a systematic refining and developing, the outcome is to arrive at an idea that answers the "how might we" and addresses the various needs, issues and emerging themes researched.

Brainstorming Ideas

When trying to come up with new ideas or to improve current offerings or to reduce the observed gaps for Italian women with low levels of educational attainment, there are various techniques that HCD and DT can offer. A tried and tested approach is to quickly scribble thoughts and preliminary concepts on Post-it notes so that various angles and directions are explored, without consuming too much time on the practicality of each concept (IDEO, 2015; Stickdorn et al., 2018). After this large idea generation, clustering and sorting into groups helps to find common areas of interest among ideas (Heffernan, 2019). See Appendix A Illustrations 3 and 4 for visualizations of this process.

Some of the ideas that began appearing from this fast process concentrated on services that encouraged self-learning, volunteer networks, support groups, peer accountability and health coaches. These concepts drew insights from a video talk from Nicholas Christakis, who spoke about the power of social networks and their effect on individual choices and behaviors (Christakis, 2010). This emulates the emerging themes and the "what If" discussed in chapters 7 and 8, of individuals providing care for one and another without traditional medical knowledge. These concentric circles of people around an individual, such as family, friends, co-workers etc., are crucial when implementing a service solution. Further evidence came from the case studies *CHAP* (Kaczorowski et al., 2011) and by comments of survey responses (Participant 27 and 85) who indicated the usefulness of a motivating figure.

Another angle was the technological route where kits, medical devices, pharmacy stations, wearables and intelligent internet bot interacted with the target audience. These reflected insights from Nes et al. (2017), Dr. Abbate's thoughts on wearables and the survey responses, see Appendix B Survey 2, related to the adoption of health devices. These ideas were focused on hypothetical scenarios mentioned in the "what if". Other ideas ranged from dietary service interventions (referencing Dr. Toldo's comments) to symptom identification games to health challenges (Sanders et al., 2020). When ideating on the various categories withing HH care, some promising ideas focused on health data tracking, large scale publicity campaigns for awareness, group classes on heart healthy habits, screening services in nontraditional locations and the creation of intermediate exercise spaces. Following this stage, in order to distill the ideas further, a ranking system is utilized to sort ideas on how accurately they address the "how might we" (Moritz, 2009; [Service Design Tools], n.d.).

In the third brainstorming, Figure 22, ideas began to converge on specific insights from the need statements, seen in Figure 19, such as the need for Italian women to recognize symptoms early, the need for emotional support in healthcare and the needs related to informational accessibility. The main concepts selected echo these ideas and reflect themes mentioned in Figure 18 such as the intermediaries for health advice, the gap in prevention and positive reinforcement of healthy habits. In summation, the brainstorming phase divergence led to a variety of service ideas for Italian women, requiring user input for the next stages in refinement (Heffernan, 2019).

Figure 22. Third Brainstorm
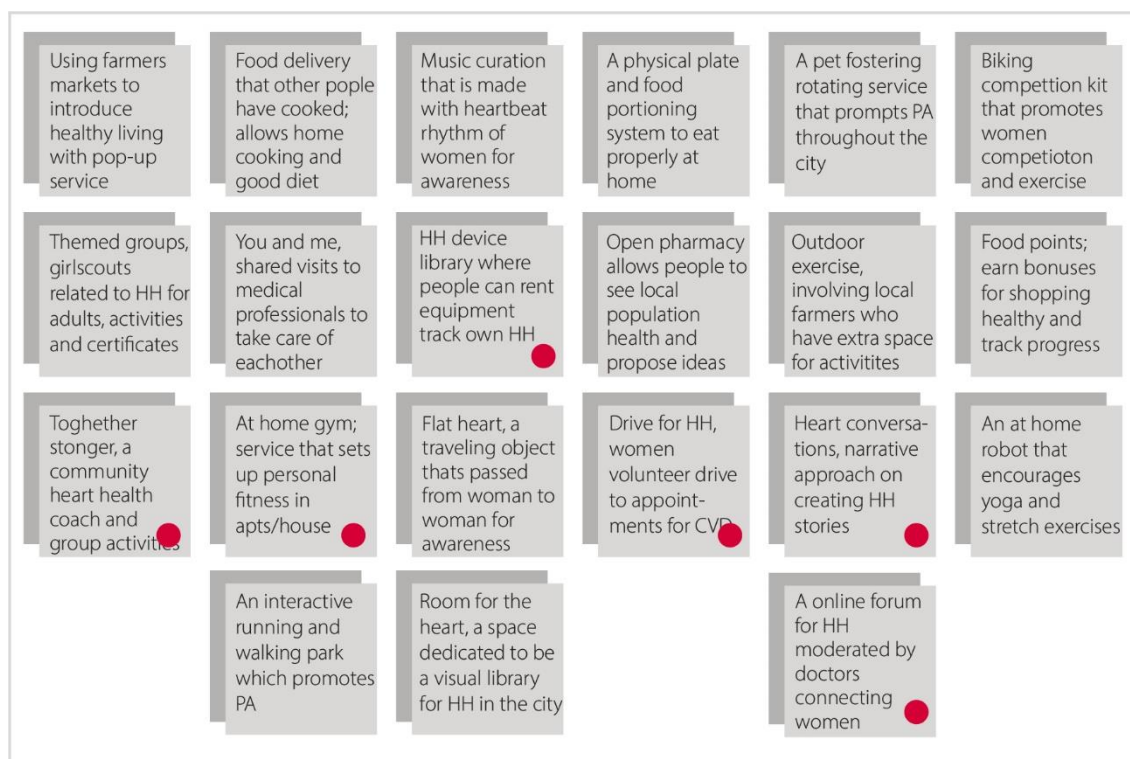
Co-Creation with Users

When developing a service system for Italian women as the target, as a designer it is important to constantly gather ideas and insights as part of the brainstorming process (Patrício et al., 2011). This step is crucial as iterative feedback can help narrow down the ideas and quickly test assumptions. This method is called "co-creation", implying the cooperative creation of participants and designers (IDEO, 2015). As defined by Holeman and Kane, "Some work emphasizes engaging users early in the process, as partners in idea generation rather than as passive informants whose role is to provide feedback on concepts developed by expert designers" (2020, p. 13). As part of the SD process, this reflects Shostack's idea that, "A service manager can test a prototype delivery on potential customers and use the feedback to modify" (1984, p. 139). This iterates the idea of early testing and incremental improvements. In relation to the HCD diagram from Figure 4, the co-creation is part of the implementation phase, converging on a singular idea. Within DT, this reflects some of the early aspects within the testing phase (Dam & Siang, n.d.-a).

For the co-creation, two participants from the cultural probes were recruited again to give their input for the idea. The session started with a "why, how, what" ladder which helps to explain the motivations and objectives of the co-creation. The structure of the online session was created with a series of questions and general feedback about the brainstormed ideas. A summarized document of the experience and questions asked is found on Appendix A Illustration 5. Sharing the conclusions and takeaways gathered the synthesis and opportunity discovery (chapter 6 and 7), the participants were briefed on the various HH preventative behaviors.

Feedback

From the co-design session, several insights to the development of the service system were gathered (IDEO, 2015). First, when proposing the idea of a learning platform, the participants were a bit apprehensive. Participants expressed a reluctance to engage in an educational service given the abundance of existing online information. The assumption that participants were eager to learn about HH given the severity of the problem clearly was incorrect. This iterates the low adoption of services like *Vivi Con il Cuore* (Gamondi, 2019), whose only value offering was a learning site. Concerning the online community, the co-creation user's input was mixed. In explaining the service, a fitness trainer or health coach was used to imagine the service, which related the service too similarly to offerings within gyms. The instrument of communication tools was too vague and difficult to understand for the participants. This idea was based on the findings that some participants in the survey, see Appendix B Survey 1, reported low communication with their doctor regarding HH (Participant 11, 15, 19, 29,57, etc.). In retrospect, a higher fidelity prototype of the idea should have been shown to better illustrate how the service would function. The participants responded positively to the idea of an open device library but were not sure on how the service would work. Training and ability to use the devices was a concern, which was a point expressed also by Dr. Toldo. However, this idea seemed promising given that the technology could be simplified and become commonplace like a weight scale.

In summation, the co-design was helpful in narrowing the brainstormed concepts and to test assumptions about the user. Future considerations would be a larger group, higher fidelity service prototypes and testing fewer concepts at a time. These considerations would allow a greater number of responses and ideas and better accuracy on assessing the ideas (Stickdorn et al., 2018).

Figure 23. Idea Selection

Heart Health volunteering health coaches and groups

The service proposed works by recruiting passionate woman to become local leads of chapters on heart health. These women run activities, classes on nutrition and social events all to encourage a social "preventative behavior" inspired group.

This service is useful as it allows women who are practicing positive lifestyle behaviors to influence their community though healthy eating, physical activity and socialization. Another positive aspect is the social groups acting as an adherence system for women at risk. Grouping for various levels of CVD risk can be created.

Downsides of this service initiative include the staffing, recruiting and compensation of said volunteers. Other problems include the location and hosting of these events. Lastly, the greatest barrier is the intense competition from existing alternatives like Facebook groups, Meetup, etc.

Entry level Heart Health device library

A borrow and return system for heart health devices like ECG and blood pressure monitors.

This service is useful because it increases awareness of important health markers; downsides is the learning curve for individuals to use it and the adoption rate of the service. One potential problem is women with low levels of educational attainment may not see value in this offering.

One suggested approach was to leverage the "care-giving" aspect and utilize it as both a training and teaching moment for the target user group. A clear advantage of this service is the self reliance, the usefulness of technology as a mediator and integration to the health system.

Online social platform for learning about Heart Health

The online social platform is a service by which interested women can learn about HH and even earn certifications similar to CPR in administering advice on good preventative lifestyle behaviors. This platform differs from other online services as its structured like an online language learning gamification but dealing with health topics. Downsides of this service is that the target audience being with low levels of educational attainment, might not be motivated to self seek learning as a service. Also, with the abundance of information available online, it is still difficult to offer a competitive offering.

One suggestion was to integrate the learning system as a subset of another solution and to scale back the level of intensity of the program (eg. accreditation and certifications are not needed)

Figure 23 illustrates the main ideas derived from the brainstorming stages and subsequent synthesizing, refining through co-creation. The first idea of the HH volunteering service showed promise and related closely to the needs expressed in the "how might we". However, the downside of requiring trained staff that acted like a semi-medical system created a vast new set of problems and was expected to be far more expensive than other solutions. As such, the service did not fit the criteria expressed in Figure 5, where viability would be difficult to implement.

The online social learning platform had promising support from the case studies and the secondary research (Gamondi, 2019). The WHO mentions, "investment in…the provision of appropriate and accessible learning for adults having had limited formal education in early life" (2019, p. xxxi). This would allow Italian women with low levels of educational attainment to understand risks, symptoms and preventative lifestyles through a semi-formal certification program. However, this idea has a major drawback. The main consideration is that the service is time consuming for the users, which as evidenced by Will and Loo, "women often describe time as the major barrier to participation in public health programs, asking them to invest time in a program unnecessarily is not reasonable" (2008, p. 4).

Out of the three ideas, the device library best addressed the needs raised by the "how might we" question. Simply, the device lending library would allow Italian women with low levels of educational attainment to access devices that would allow them to semi-independently understand their heart health while alleviating the burden on the medical system, a concept echoed by Raghu et al. in the discussion of health accessibility (2015). The heart health library could support the changes in healthy living through frequent measurements, an idea supported by Kaczorowski et al. (2011) who reported a similar technique used in the *CHAP* program. While in the infancy of the development, this idea has promising potential when contrasted with the "emerging themes" discussed in chapter 7, and the "need statements" and "what if" discussed in chapter 8. From Figure 18, the theme of health markers and trackers, the impending doctor shortage and the underdeveloped telemedicine support the idea of a device library. From Figure 19, the idea iterates the selected need that Italian women with low levels of educational attainment need a way to independently access HH information, which further confirms the device library concept. Similarly, in Figure 19, the device library echoes the statement that women need a way to measure their HH quickly. Within Figure 20, there is further validation that a device library is a strong idea given that the concept answers the health kit, the ability to access care regardless of time and the tracking of others heart health speculative approaches to innovative services.

In the next stage of the idea, the goal is to continue to expand on the device library concept and to develop a prototype for testing and implementation, as laid out in the HCD and DT process. This involves mocking up the service and utilizing tools to visualize the involved components (Mortiz, 2009).

Service System Prototype: Battito

From the feedback from the co-creation with users, the idea of the HH device library was developed further. This process follows the DT process mentioned in Figure 3, where stakeholder feedback is incorporated into the refining of the ideas (Altman et al., 2018). In order to make the service system tangible, a branding of color, typography and logo design was created to delineate the service. Figure 24 illustrates the name of the service and the visual language. Battito, which translated from Italian means *beat*, expresses the relationship of the service to a heartbeat. The icon itself is composed of overlapping hearts which emulate the concept of caretaking, a component of Battito's service.

Battito is a service system that encourages Italian women to better take care of their heart and care for others HH through a medical device lending platform which educates on early CVD detection and symptoms, an integrated patient record portal for health tracking and a digital app that promotes preventative lifestyle behaviors and changes in daily practices. The first component of the service is the medical device lending platform, which allows Italian women with low levels of educational attainment to have greater accessibility to health tracking devices, such as a blood pressure monitor or

electrocardiogram to measure their HH. The second component of the service is the patient record portal, that if linked to the medical system, allows Italian women to be in greater contact with the medical system and submit data and analytics about their health for improved medical visits and understanding of HH changes over time. The third component of the service is a digital companion app that tailors' advices and activities to Italian women, increasing their adherence to positive lifestyle behaviors like diet, physical activity and mental wellbeing, as expressed in Figures 6, 7, 8 and 10. Furthermore, Battito offers other sub services as part of its offering, to reach the objective of increasing equity of outcomes for Italian women with low levels of educational attainment.

In answering the "how might we" posed in chapter 8, Battito empowers women to enact preventative lifestyle service though the understanding of their HH by being able to access a range of HH devices. These devices, through the guidance of Battito, offer Italian women greater independence on assessing their health and a greater understanding on how lifestyle changes can improve HH. Furthermore, Battito offers this service with the understanding that future limitations in the healthcare field, expressed in the "how might we", are likely to reflect on disadvantaged and at-risk populations, such as Italian women with low levels of educational attainment (Rosengren et al., 2019). Lastly, Battito cares for loved ones by leveraging interpersonal connections and the greater accessibility of HH devices. Italian women are encouraged to measure and provide suggestions to family members, friends and others.

In the following section, greater detail in the operation of the Battito service system, the stakeholders involved and the processes involved are conveyed. Further information is available in the various tools present in Appendix A.

Figure 24. Branding Service System

Service Operation

Battito operates under two models, a free service and a premium paid subscription, depending on whether users are referred to the service as a medical prescription. Battito can be assigned, free of charge, to at-risk patients by through doctor recommendation. In part, Battito aims to be subsidized by the national healthcare system, in order to provide the service for free to vulnerable populations. In return, Battito will provide valuable population health data and reduce the cost on treatment care with a healthier public. As evidenced, in Italy alone CVD costs amount to over 20 million euro per year (Mennini, 2017). Furthermore, Battito anticipates the future of Italian healthcare where systems, "must change from being a simple cost center to become a center of investment and promotion of excellence" (Aspen Institute Italia, 2016) thus offering preventative care as an asset.

This allows doctors to subsequently receive and track patient information, measurements and activity participation. This addresses the current issue raised by Kottke and Horst where, "many physicians [have the inability] to access and visualize their patient panel electronic medical record data for patient and quality management" (2019, p. 1). The paid subscription model allows anyone, for a small

fee, to access the service. This is supported by Dr. Farina's and Dr. Abbate's comments that wearables are useful for the identification of CVD.

For both subscription models, users have access to HH devices like a blood pressure monitor or electrocardiogram at various pickup locations. Users are incentivized to borrow these devices as they would otherwise be expensive as a purchase, a phenomenon observed in the Apple Watch case study (Baig, 2020). These devices are loaned for a defined period and are after returned for maintenance and disinfection. Battito leases whitelabel devices from medical manufacturers, companies such as Philips or Johnson & Johnson, and distributes them to the various stakeholders involved in the service.

Accompanying the devices is the Battito application, which acts as an interpreter for the devices, a tutorial system and a healthcare link. Supported by the research, a digital touchpoint like the Battito app is valuable as it offers a scalable preventive measure and awareness tool for CVD (Raghu et al., 2015; Reddy et al., 2016). Through the application, users can access a variety of services, as shown in Appendix A Illustrations 12, 13, 14 and 15. The main services Battito offers through the digital tool relate to the modifiable preventative behaviors listed in Figures 6, 7 and 10. This includes a better dietary regiment that adheres to the MED diet, the control of stress through meditation and wellbeing activities and the increase of physical activity by integrating movement into the day. Battito's application content is crafted by health experts to be accessible and succinct. This includes the creation and tailoring of advices and activities for a range of individuals so that recommendations can be "personalized" and relevant. Through these topics, Battito aims to ameliorate the way Italian women with low levels of educational attainment consider their heart. Battito's application becomes a facilitator and accountability tool for the implementation of healthy living practices into a routine, an idea supported by Sanders et al. (2020).

Since Battito is a HH device rental platform, the expectation is that a portion of users will use the service as a way for caring of relatives, friends and significant others. By being caretakes, Italian women can indirectly strengthen their community, increase their knowledge about heart health, and learn about key health markers involved in early prevention efforts (Christakis, 2010). This is evidence in Kaczorowski et al., who used informally trained health volunteers as community educators (2011). The evidence for this was also supported by Survey 2, where 7 out of 10 women were actively caretaking someone else.

Battito's service follows the examples of prior successful public health policies but expands the scope of the preventative efforts. Referencing the policy priorities expressed in Figure 6, Battito's service works as a population health intervention and as a tailored management of risk factors for individuals. Battito's service addresses the majority of, "Nonpharmacological interventions" (Arnett et al., 2019, p. 179) advised by the AHA as a singular program. Other research indicates the innovativeness of Battito as Damiani et al. discusses prior public health programs in Italy:

> "The NPP recently developed in Italy recommends routine monitoring of blood pressure, cholesterol and glycaemia for adult…This framework programme aims to promote healthy lifestyles through improved nutritional habits, physical activity, reduced smoking and alcohol abuse. The programme combines population-level interventions with individual action on risk factors and their underlying determinants to strengthen the health system's prevention capabilities" (2011, p. 595).

This future framework set out by the NPP is achieved through Battito's service. This renders Battito unique, whereas past programs would only propose singular interventions such as diet counseling or physical activity training ("Stepping into Healthier Communities," 2017), Battito tackles HH on several of the modifiable risk factors.

In summation, Battito works by leveraging existing technologies and stakeholders within the healthcare system to rethink and shift HH care though a sharing platform. This is an important future consideration as Teso et al. evidences, "The way people access healthcare services has changed" (2013, p. 43). Through the SD offering map, storyboard, service blueprint and system map, Battito answers the "how might we" and initial objectives of improving equity of outcomes in HH.

Offering Map

In SD, the offering map is a singular diagram that lays out all the various benefits to the target user and involved stakeholders ([Service Design Tools], n.d.). These benefits can be both tangible and intangible in nature, such as lower blood pressure and increased health awareness. The offering map breaks down the value proposition into categories and directional flows to show the interaction between the various actors (Moritz, 2009; Patrício et al., 2011).

Figure 25. Battito Offering Map Diagram
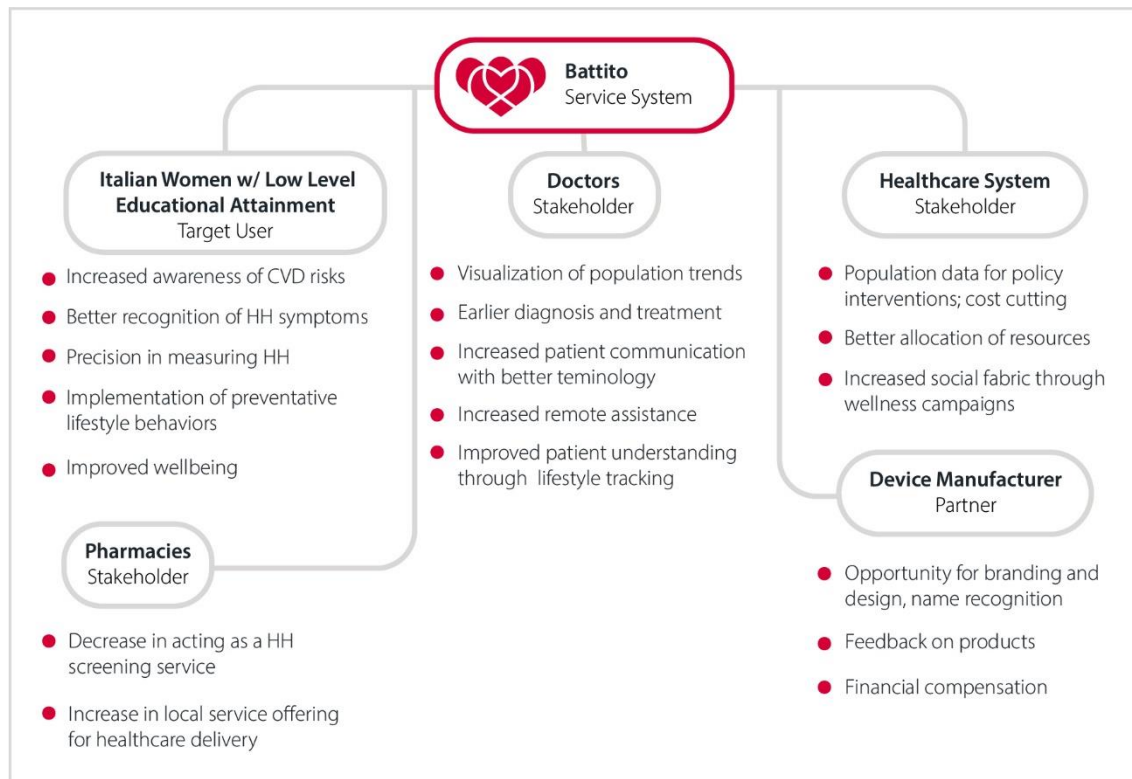
Storyboard

Since SD is intangible at the ideation stage, visualizations such as the storyboard help to illustrate how the service system would work to the benefit of the user (Stickdorn et al., 2018). Storyboards are idealistic narratives that show in chronological steps the value propositions of the service (IBM Studios, 2018; [Service Design Tools], n.d.). Storyboards are composed of the user, in this case Marta, an Italian woman with low levels of educational attainment, the context of the interactions and the major actors that deliver the service. Remembering the key philosophies from HCD, this diagram exemplifies the ideals of desirability to the user (IDEO, 2015). The storyboard for Battito can be found in the Appendix A Illustrations 6 and 7, which showcase the first persona, Marta from Figure 14, navigating the proposed service system.

Service Blueprint

A key deliverable in any SD proposal is the service blueprint. This diagram is used to visualize all micro-processes that are involved between the users in a service and the organization of the service

([Service Design Tools], n.d.; Shostack, 1984). The blueprint is subdivided by a front stage and backstage of interaction on the vertical axis and chronological user actions on the horizontal axis. Front stage interactions are processes and steps which involve the user. Back stage interactions are a result of the users' actions or background processes that enable a set of user actions. They are not visible to the user. (Gibbons, 2017) Typical front stage categories are touchpoint, physical products, digital interfaces and people. The backstage is typically formed by components such as governmental policies and regulations, technological infrastructure, background employees and support services (Patrício et al., 2011). For Battito's Service Blueprint, see Appendix A Illustration 8 and 9.

System Map

Another tool to visualize a service prototype is a system map. In SD, system maps help to synthesize all the various actors, interactions and flows into a single stratified, high level diagram ([Service Design Tools], n.d.). The flows and interactions help to understand the dynamic processes by which information, hardware, money etc. are exchanged within the service (IBM Studios, 2018). Battito's system map, Figure 26, shows the various flows between the healthcare system, the pharmacy, doctors and the medical device manufacturers (Shostack, 1984).

Figure 26. Battito System Map Diagram
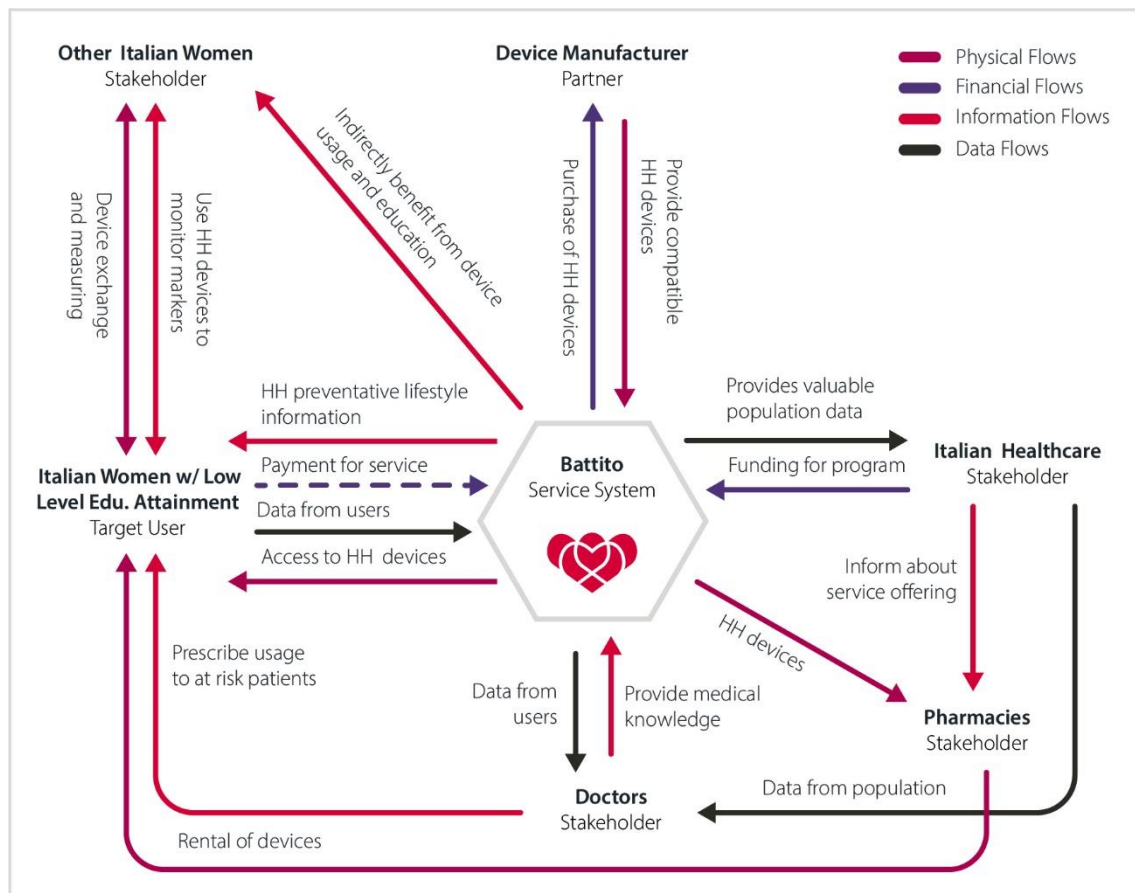
In summation, various SD diagrams have explained Battito's answer to the "how might we" for those at-risk and how the service operates ([Service Design Tools], n.d.). In the next chapter, the service's innovation and contribution is illustrated through insight mapping and digital prototyping.

10. Development

In SD thinking one of the final steps in the process is the delivery of a service system prototype (Moritz, 2009). The prototype is not the end of the SD process, but rather the initial stages of implementation and refinement. This iterates the DT approach seen in Figures 2 and 3, where the testing and delivery phase are used to restart the process with new insights, learning and empathy (Heffernan, 2019). In HCD, this step ensures that the service solution fits within the Innovation diagram, seen in Figure 5 (IDEO, 2015). The objective of this stage is to mockup details of the service, create a business plan and to lay a roadmap for a pilot service implementation.

Innovation Point

Battito is an innovative medical device lending platform service for several reasons. Using the "breadcrumb chain of evidence" (Stickdorn et al., 2018, p. 358), a method which guides the user through the design process, a summarization of the various insights and how they are addressed in the service system helps to clarify the link from the research. These points are illustrated in Figure 27, where the high-level insights from each stage are summarized and addressed through Battito.

Starting with the desirability of the service, Battito gives Italian women the ability to monitor their HH quickly and independently. This is an appealing offering given the current frustrations with bureaucracy in the healthcare system, as evidenced by participants in Survey 1 (Participant 2, 22, 27,40, 56, 62, etc.). Furthermore, Battito is a desirable compared to other services for its holistic approach to HH. Battito integrates all the insights from the preventative modifiable behaviors into the service. Through the application, Battito educates about the MED diet, proper physical activity, mental health, alcohol reduction and tobacco cessation. Compared to other services, like the *COF* Walking Program and Fibri Check, this multi-faceted approach ensures that individuals can improve their HH on several different vectors, a policy recommendation set out by the WHO (2019).

In addition, Battito is an innovative service as it leverages the increased accessibility of HH devices as a pretense for learning. Implicitly, by signing up to the service and measuring health, users are becoming more knowledgeable and familiar with HH terminology, preventative lifestyle behaviors and risks. Another outcome is the changes in daily practices, that are encouraged through the Battito application. Unlike past interventions that just aim to measure, like the Apple Watch (Baig, 2020), *Banca del Cuore* (D'Aria, 2017), Battito's learning and activity suggestions aim to combine data and behavior recommendations for a holistic preventative approach.

The feasibility of Battito is in part what makes the service an innovative program. Since blood pressure monitors, pulse oximeters, electrocardiograms and heart rate monitors are great technologies to understand HH, Battito's aim is to increase the accessibility and availability of these devices to non-experts. Battito's application also iterates Will and Loo's proposal that future care can be more feasible using "approaches such as self-help; video, computer-, or Web-based delivery" (2008, p. 4). Furthermore, Battito works by leveraging existing systems such as device manufacturers, healthcare professionals and health intermediaries like pharmacies, making adoption of the program more practical. By aligning these stakeholders, Battito creates new opportunities to address inequities in HH care for Italian women.

In terms of viability, Battito is an innovative service as it shifts the healthcare dynamic from traditional doctor led care to emphasizing self-care. While admittedly this conversation is controversial, as evidenced in the expert interviews, there is an urgent need for this change in Italy given the impending shortage of medical professionals. This new market opportunity and rising demand makes Battito a viable service for the future. Battito directly faces this shift by providing a system where self-care can become more reliable and mainstream. In service design, part of the aim in creating new services is to foster hard conversations between the establish practice and change (Gibbons, 2017). Battito's vision of HH aims to challenge traditional healthcare models.

In summation, although much of Battito's application hinges on the usage of technology and devices, the deeper aim is to alter the patient-doctor relationship. As Holeman and Kane point out, part of service design is to encourage a look beyond technological solutions and to instead address more systemic challenges (2020).

Figure 27. Breadcrumb Chain of Evidence
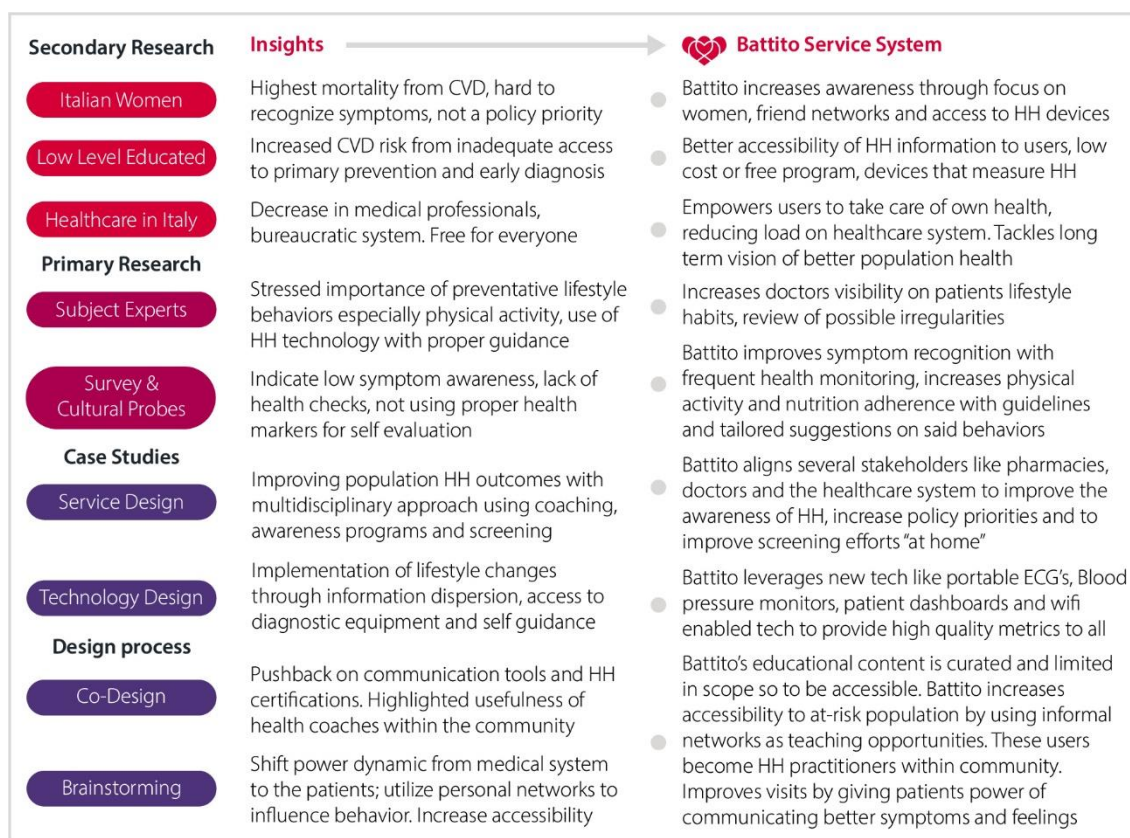
Minimum Viable Product Application

As part of the SD and DT method, prototyping a solution is important when proposing a new concept (Dam & Siang, n.d.-a; Moritz, 2009). Prototyping is a draft level implementation of the service solution that addresses the key needs identified in the prior stages and evidenced in Figure 27. Within prototyping, an *MVP*, minimum viable product, is a key terminology which describes an application with the bare level of functionality and features that would allow user testing (Stickdorn et al., 2018). Choosing a digital application for Battito has strong evidence from the research. As an example, Raghu et al. through their application showed that digital technologies are an efficient and inexpensive way to disseminate preventative behavior and lifestyle information that is curated by relevant health authorities (2015). Additionally, the technological case studies have evidenced the power of carefully planned digital tools to shift user behavior and to act as an early stage symptom detection system (e.g. FibriCheck and Apple Watch). Overall, the design of a persuasive tool for heart health change is an important step when trying to implement new habits (Sanders et al., 2020).

To design the MVP for Battito, an application map, wireframes and prototype mockups were created to help illustrate the vision of the service. Starting off with the application map, this diagram serves as a high level navigational and structural view of the digital application ([Service Design Tools],

n.d.). The purpose of this tool is to describe the hierarchy of components and to enumerate the various actions and user journeys through the Battito service. In Figure 28, the application flow shows how Battito includes the key offerings of learning about HH symptoms, preventative lifestyle suggestions, measuring and assessment of HH and the linking of results to the medical system. Furthermore, the map shows that users can set personal goals, a finding supported by Avanzini et al. research, which stated, "The method consists of a simple annual review of the patients' comprehensive cardiovascular risk profile using a brief checklist to plan the recommendations and set the goal for the next year" (2016, p. 953). Another aspect shown is the support to the local communities through a guest mode for measuring others HH. These user actions reflect answers to the problem raised in the "how might we" question.

From the application map, wireframes of the Battito service are created to give an initial understanding of on-screen content and layout (Stickdorn et al., 2018). Using the wireframes helped establish a layout whereby the bottom navigational bar of the application contained three large categories described in Figure 28 of the learning center, the measure of heart health and goals. The wireframes also established the structure of how information would be presented to the user given the target of individuals with low levels of education attained (Raghu et al., 2015).

Apart from the visuals, wireframes serve as a rough prototyping tool to understand how the Battito application will fit within the existing user journey and as a tool to enact the key objectives outlined in the offering map and system map. For the target user, this is the recognition of symptoms by using the learning center flow, the implementation of preventative lifestyle behaviors though the goal setting flow and the recognition of symptoms using the measuring flow. Further details and example of the wireframes are in Appendix A Illustrations 10 and 11.

Figure 28. Battito Application Map
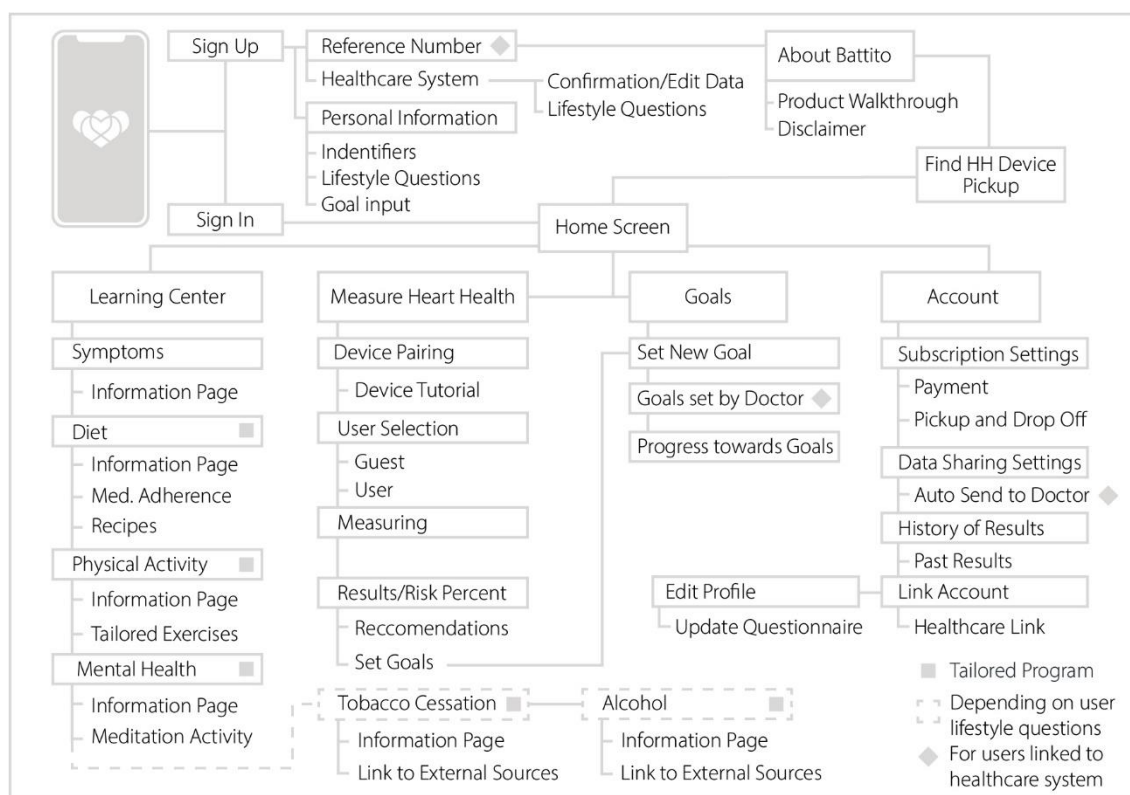
With the objective of testing the concept, several mockups were created from the wireframes to envision the Battito service. In Figure 29, screens are shown illustrating core aspects of the service offering. The first screen illustrates an onboarding questionnaire that considers the user's current lifestyle through the important modifiable behavioral factors described in the secondary research. The question format was mentioned by Nes et al. (2017) and Kaczorowski et al. (2011) to collect useful data. These are physical activity, diet, stress, tobacco usage and alcohol consumption. This questionnaire is used to provide increased accuracy when using the measuring device, a key offering from Figure 25. The middle screen displays the user's home dashboard which features a simple to understand rating of health and a variety of suggestions based on answers provided in the questionnaire and past measurements.

The learning section of the app familiarizes Italian women with low levels of educational attainment to the main preventative lifestyle categories and symptom identification. Starting with symptoms, the app uses the WHO (2014) factsheet, Giardina's findings (2000) and Dr. Farina's professional comments to indicate manifestations like discomfort in the chest, nausea, dizziness, breathlessness, perspiration, a sensation of fluttering in the heart, fullness in the chest, etc. While Battito is not intended as a diagnosis service, the detection of symptoms if used correctly can alert unaware users to potential issues, a key offering as seen in Figure 25. Further mockups of the screens are found in Appendix A Illustrations 12, 13, 14 and 15. These additional screens visualize key aspects of the service and can be used for user testing and feedback.

In terms of the diet recommendations, the application links users to nutritional recommendations, a MED adherence score and recipes that relate to the MED diet. In terms of nutrition basics, Battito emphasizes Aune et al. (2017) findings for the increase in vegetable and fruit intake, Eckel et al. (2014) advice to consume a variety of grain products, foods low in saturated fat and trans fat and increasing fish consumption, Dr. Toldo's concern with food quality. In conjunction with the nutritional basics, Battito uses a point system like the one proposed by Panagiotakos et al. (2006) and referenced by Grosso et al. (2017) to see how at-risk individuals compare to national guidelines. Lastly, Battito suggests recipes to create dietary interventions, a well understood correlation by users surveyed (Survey 2, 135 Participants).

In advising for physical activity, Battito's application references the secondary research, utilizing professional input to guide the activities and suggestions in the app. Battito uses Musumeci's (2016) recommendations for physical activity, seen in Figure 10, Nes et al. (2017) metrics of 150 minutes of moderate-intensity activity or 75 minutes of vigorous intensity activity per week and Dr. Toldo's suggestions of walking around the house, avoiding sitting for extended periods of time and using stairs instead of elevators to offer a set of programs for Italian women with low levels of educational attainment. Furthermore, each activity takes Tintori's (2015) and "Stepping into Healthier Communities" (2017) insights of that exercise should be integrated into small periods of time in the daily routine.

For the mental health, Battito's app uses mindfulness-based stress reduction, the usage of meditation, and CBT therapy for individuals at-risk, following Dar et al. (2019) stress management techniques. See Appendix A Illustration 15. Battito as a holistic service also tackles the issues of alcohol and tobacco indirectly. Linking Italian women with low levels of educational attainment to outside management resources, underscoring the research by Erhardt, (2009) Benowitz and Burbank, (2016) and Lugo et al. (2017) Battito ensures that CVD is addressed through all the modifiable risk factors.

The screen on the right shows users who have utilized HH devices a risk metric and calls to action for preventative and treatment initiatives. Raghu et al. supported the idea of embedding a risk assessment as part of a way to disseminate essential information regarding CVD (2015). This is a central point to Battito's offering and the design of the digital application, through the measure feature and subsequent screens. Furthermore, Raghu et al. indicated the importance of instructions for procedures, a feature integrated through the device pairing and tutorials, seen in Appendix A Illustration Sample 2

In summation, Battito's digital application acts as a tool to implement lifestyle changes and ameliorate heart health for Italian women with low levels of educations. Through measuring, healthy routine reinforcement and increased health literacy, Battito aims to increase equity in HH.

Figure 29. Battito Application Prototype Sample 1
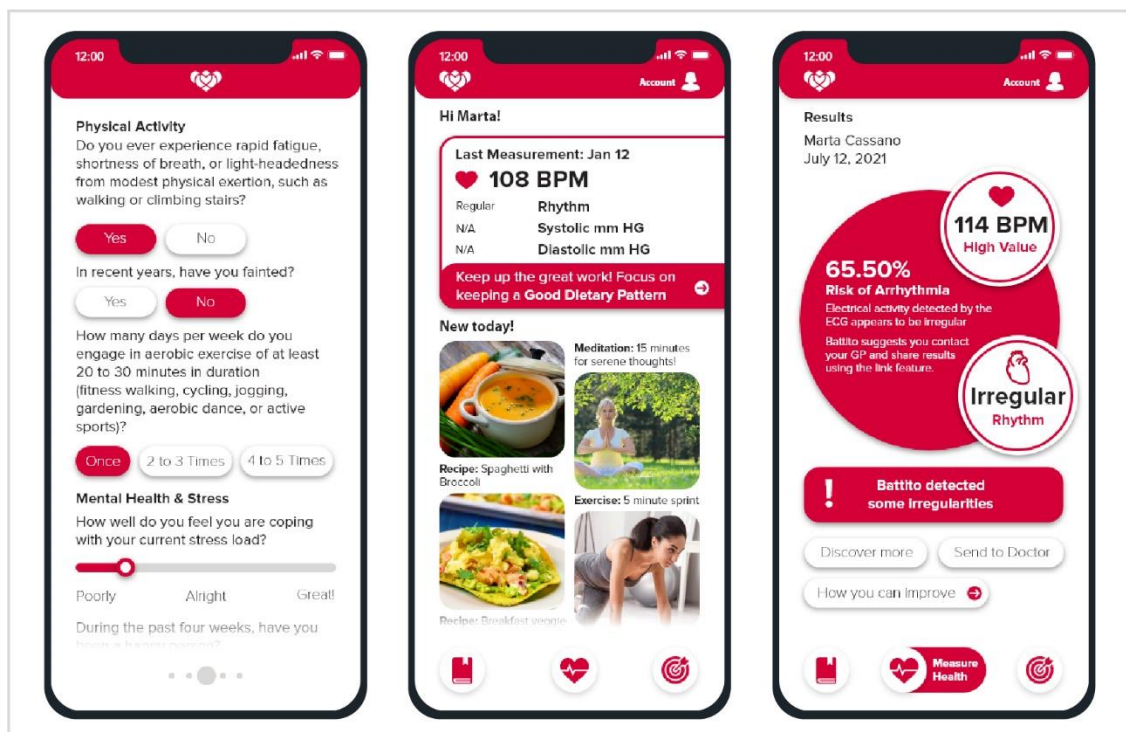
Business Model Canvas

At later stages of the SD development, implementing a business plan is critical to ensure the livelihood of the service system (Moritz, 2009). In developing Battito, the business model canvas is used as a single page summary to synthesize the main proposition of the prototype (IDEO, 2015; Stickdorn et al., 2018). For reference see Appendix A Illustration 16. The canvas focuses on the value proposition, user segments, channels of distribution, key activities involved, key business partners and the necessary resources involved in the delivery of the service. Additionally, there is a cost analysis that includes the revenue streams and the cost structure involved in creating and running the service (Ebinum, 2019).

Starting with the key partners, Battito works with device manufacturers, pharmacies, the Italian government and social campaigns to deliver the service (Stickdorn et al., 2018). The key activities are Battito's knowledge curation and the management of HH devices. The key resources reflect the necessary requirement for Battito to deliver the offerings; this is the cooperation of health device manufactures and the knowledge of consulting health experts for the application. The value proposition iterates the offering map, by listing the core benefits and the value exchange that Battito offers to users (IDEO, 2015). Customer relationships describe how Battito interacts with users, which is primarily through word of mouth and social relationships. The channels of distribution indicate how users will become aware and interact with Battito (Ebinum, 2019; Stickdorn et al., 2018), which is done through advertising and at the recommendation of medical professionals. The user segment is comparable to the persona and is a representation of the target audience intended for the service system. Expenditures in operating the Battito service, comes from the rental of medical devices and the required setup in creating drop off and pickup points. Battito's revenue comes from paid subscription services and government funding.

In summation, the canvas shows that the service has a large potential target market of 4.2 million women, as calculated in Appendix A Illustration 16. Furthermore, this tool helps illustrate all the various stakeholders involved and their contribution to the service delivery envisioned by the Battito concept.

11. Conclusion

In this final chapter of the thesis, a summation of the process and insights is recounted. In concluding the work, some critical reflections about the methodology and the service prototype are considered. Finally, given that SD is a journey of continual improvement, future considerations and remarks are expressed about Battito.

Summation and Reflection

Recapitulating the objectives laid out in the first chapter, the goal of this work was to apply the methods, frameworks and tools from service design, design thinking and human centered design to the topic of HH. Furthermore, using said methods, the objective was to create a service system prototype that addressed inequalities in healthcare, for an at-risk population group. Though the design of Battito, both these objectives were met. Battito's design was constructed using a blended process of SD, DT and HCD, where tools such as personas, the "how might we", co-creation, storyboard and service blueprints all conveyed the offering and the service's operation.

Initial research explored the topic of HH, causes of CVD and the specific context within Italy. This was done through exploratory secondary research. Throughout this process, by observing patterns, an at-risk target population was identified: Italian women with low levels of educational attainment. Participation from experts, users and scholarly research helped in narrowing down key problems within this population and through various tools like cultural probes and surveys, insights were gathered. Following this process, the information was sorted through design tools into opportunities, challenges, themes, user attitudes, feelings and possible future scenarios. This data was used to brainstorm innovative services, which culminated in the creation of Battito.

Battito is a medical device lending service platform which helps Italian women with low levels of educational attainment access tools for health measurement, early CVD detection, and preventative lifestyle routine changes. Battito, through routine body measurements, empowers women to adhere to the MED diet, control stress through meditation and wellbeing activities and increase of physical activity. As a service, Battito anticipates the future needs of the Italian healthcare system and increases the scope of the preventative efforts towards HH.

Reflecting on Battito, some areas of improvement in the process should be mentioned for future projects and ideation. Starting with the secondary research, the diversity of information and the various approaches to HH were difficult to organize into a targeted approach. In retrospect, the scope of the research should have been better defined, a point mentioned in Stickdorn et al., "your research should fit within certain business constraints, as you always have to consider how to best allocate your time" (2018, p. 102). A sprint or time boxed period of research would have been helpful in directing the process. One drawback within the primary research was the usage of online research for gathering data and user interviews. Having the opportunity to shadow the user target could have uncovered other insights and ideas not explored. Shadowing is a valuable HCD process that allows designers maximum immersion into the topic though observation (IDEO, 2015).

Another reflection is on the testing of ideas with the target audience more frequently and with low scale prototypes. Despite including DT and HCD as methods to guide the process, as seen in Figures 2, 3 and 4, SD is difficult to implement in low fidelity as the representation is imprecise to the idea. This led to limited participant involvement until the development phase of the project.

In conclusion, Battito's offering showcases the value of SD thinking as a tool for the innovation of healthcare systems. Furthermore, the mixed method approach used to generate the concept of Battito indicates the value of a multi-disciplinary approach to tackling complex systems, an idea supported by Patrício et al. research into the "Multilevel Service Design (MSD) Method" (2019, p. 183). Lastly, by concentrating on at-risk individuals, Battito emphasizes the importance of empathy within innovation.

Future Considerations

Given the looming health crisis in Italy, current systems will inevitably be unable to cope with patients and population health as they have been traditionally (Pini, 2018; Redazione Ansa, 2018). This will ultimately force changes in how HH care is delivered. As expressed in Patrício et al., "leveraging service design to foster innovation amid the complex systems of healthcare requires new collaborations. For example, the evolution towards people-centered care, integrating both formal and informal care networks, requires the integration of service design with additional perspectives" (2019, p. 119). This quote illustrates that to achieve change, traditional systems must be willing to accept new partnerships and ideas, such as Battito. This plays to the favor of the Battito service concept as these impending needs will create new avenues of development for the service.

While this work concludes with a service system prototype as outlined in the objectives, thoughts about future development and reflections on the concept thus far are part of the SD and HCD approach (IDEO, 2015; Patrício et al., 2019). At the current stage Battito is a prototype that remains largely untested with limited user feedback. Next steps would include securing funding and implementing a small scale live-pilot that includes stakeholders involved. As IDEO describes, "Pilots can last months and will fully expose your solution to market forces" (2015, p. 146), this presents an opportunity for learning and rigorously testing the concept. Following feedback and changes from the pilot, Battito would begin establishing all the various relationships described in the business model canvas, see Appendix A Illustration 16 for reference, in order to grow to scale. This process is part of realizing the service as described by Moritz (2009), whereby a roadmap of the service development is created.

Another angle of future considerations within Battito is the development of heart health devices. The current proposition of the service is to lease devices from major medical manufacturers, but this brings about some risks in terms of competition, reliance and compatibility. If Battito's service system proposal is met with good feedback from the pilot, the development of proprietary hardware that fits the users' needs and Battito ecosystem would help deliver the main offerings. Currently, there are a variety of devices that can be redesigned to be compatible with the Battito service system such as blood pressure monitors, cholesterol measurement devices, blood sugar monitors, ECG devices and even Holter monitors. As an example, see Appendix A Illustration 17, which showcases a concept design for the ECG and blood pressure monitor used in the application prototypes and storyboard. Especially with the considerations of borrowing and safety, many of the devices can be reconceptualized to work within a sharing economy system. Innovations in technology can also facilitate the process of measuring heart health and reduce the knowledge barrier for many individuals, thus changing the traditional roles between doctors and patients.

Beyond being a service system prototype, Battito as a concept is evidence of a larger shift in healthcare practices, technology and people's access to health (Aspen Institute Italia, 2016; Baig, 2020; Patrício et al., 2019; Teso et al., 2013). While more research and testing of the Battito prototype would validate this claim, evidence thus far has led to the conclusion that service systems like Battito are the way of the future for heart health.

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Appendix A

Illustration A 1. Cultural Probe and Responses

Illustration A 2. User Journey Map

Stages	Unaware		Aware			New Habits or Treatment		
Doing	Living with unhealthy habits, unknowingly Feels unwell, first symptoms	Talks with friends about feeling not well	Goes for blood donation or cancer screening for convenience Goes to the pharmacy for preliminary assessment or advice	Goes to the doctor despite medication; symptoms worsen Self medicates	With negative relationship with GP, lifestyle advice is inconsistent With positive relationship with GP, lifestyle advice is more effective	Keeps taking medication but avoids preventative behaviors Implements changes to diet and exercises as instructed	Doesn't feel better; opts for increase in medication Feels better with new lifestyle Stops lifestyle recommendations prematurely	Developing of more serious conditions and increase of CVD incidents Continues lifestyle preventative behaviors and measures health markers
Thinking	Not likely to be HH related. Ignores symptomatology repeatedly Stressed, tense and exhausted	That friends know how to deal with health; collective experience as knowledge base Feels comfort having discussed issues with friends	Screening is faster than scheduling an appointment and doctors are reserved for more serious issues Scared to confront any possible issues	Hopeful that medication can solve the issue	Change is difficult and overwhelming; resigned and fatalist in approach That change is possible by prioritizing self care and awareness		Once health is improved, I can go back to my lifestyle	"What will happen will happen", resigned to health deterioration HH is possible to achieve through some effort and changes

Feeling: Positive Route, Negative Route

| Opportunities | Increase awareness of first symptoms and preventative lifestyle behaviors | Guided conversations between peers; health coaches and possibility of semi experts | Rotating and traveling screening events for HH, like a diagnostic truck or device rental | Medication adherence product and service system | Increase literacy to communicate with GP about HH and improve patient-doctor relation | | Integrate health tracking and support network for women | Create social support for adherence of lifestyle, including rewards |

Illustration A 3. Service Brainstorming 1

Calls for heart; volunteers call patients to talk preventative behaviros	Education groups for at risk patients; grouping for socialization	A lending library for HH material that is accessible	A blended physical digital product that shows HH in real time	Inverse cigarette pack, challenges good activities instead	Medical devices at pharmacy that link to smartphone records	Link woman; become long lasting friend and mentor for HH
Doctor shadowing; see the risks & understand CVD	The university of the heart; learn about CVD after school	Heart calendar that challenges the individual to different positive activity	Having a friend who is a doctor; networking program for informality	A collection of post cards and notes reflecting themes in HH for women	A HH bracelet that shows support. Glows when near other members	Doctors can assign health coach to patients and track progress
A pairing necklace given to family members that acts as an ECG	A diary that gives activities at the end of the day to complete story	Monthly care kit at home dedicated to different preventative	Learning from top chefs and nutritionist on proper eating through tutorial	A HH club though FB that encourages healthy activities	A gamified dancing mat to allow exercise at home and no setup	Smartphone bot suggests activities based on PA amount detected
Pharmacists can enroll PA people in a discount service	A website that helps people identify symptoms through talks	A health coach that instructs how to relive stress; uses local parks	A wearable bracelet that links two womens HH toghther	A rotating HH truck that visits farmers markets for diet help		Rent medical devices to undestand you HH risk and educate self
	A meal kit that provides easy HH recipies to women that are fun to make	Data from pharmacies is sent to gov for local HH campaigns		A service that helps women relax and sleep well to avoid stress CVD		

Illustration A 4. Service Brainstorming 2

Caregivers

Can track their HH through a smart finger ring or jewelry	Are trained by a doctor led specialty class on nutrition
Rotating volunteer program for PA in the park	Can measure by using borrowed device from pharmacy

Medical professionals

Give patients a designated spot in city to exercise as cure	Train patients on using guide for HH devices such as heart rate
Can receive pharmacy info on patients habits and meds	Use dashboard to monitor patients food habits
	Repurpose old ambulances for checkup stations

Those unaware of having CVD

Attend publicity campaign in pharmacy where given app from QR	Can borrow heart rate monitor from doctor to understand HH
Medical truck that goes around city offering free screening	Participation in campaign where women are given branding pin
Are paired with other women to be a HH buddy for life	Use interactive kit to better communicate symptoms at Dr.
	Gamification of HH terminology for better vocabulary

Italian Women diagnosed with CVD

Virtual check in with device that tracks their lifestyle habits	Booklet or app that teaches simple at home exercises
Replace cigarettes with tool for better health in pocket	Digital consultations with bot trained by doctors
Given exercise challenges, are rewarded if completed	

Aware of risks but apathetic

Friends measure HH for them using device or smartphone	Health coach visits women and creates local walk group
Volunteer group activities for HH, like group cooking classes	Organized trip by HH specialist to motivate care through travel

Illustration A 5. Co-Design Session

Why: Wish to help Italian women to have good HH so that they can live longer and healthier

How: by building a network that enables women to take charge of their health

What: Provide a service platform that enables this skill and knowledge to develop

Cardiovascular disease is the main cause of death and for Italian women. CVD affects women more given that they tend to have a lower perception of risk and therefore underestimate the symptoms; as a result they often turn to emergency services with considerable delay; they typically put family care over their own HH (Orthmann, 2019)

The aim of this thesis work is to prototype a solution to help Italian women maintain optimal heart condition, so they can live longer and healthier.

What would you imagine a service of this like, can you offer people?
What resources should it provide? How could they be provided these resources?

The vision of the service intervention; to provide Italian women the confidence and tools to implement preventative lifestyle behaviors through a new service offering.

How would could this information be provided?
What tools do you think they can be used?
As you imagine women can take care of themselves, of theirs family and friends?

Proposed service concepts

- A service that connects interested women into an interactive digital platform for HH learning

- Service system where women can sign up into a health-conscious community that is guided by a mentor

- Communication tools; a set of cards and conversation starters for medical terminology knowledge

- A service to certify Italian women volunteers to be HH community knowledge access points

- A lending service that allows Italian women to access a "library" of HH medical devices

- Other ideas gathered from participants

Communication tools; They encourage discussion of HH within family or between friends through use of direct and playful, images like a game. These tools allow to have a greater awareness of this topic.

Learning platform; A digital space where women can learn to know the various risk factors, diets, exercises and healthy habits. Clear confusions on heart health with the intent to make scientific data and accessible information.

The lending library allows women to borrow ECG and blood pressure monitors and take health metrics and scores into their smartphone devices. Allows for medical professionals to monitor health and to gather data. Empowers awareness and allows for women to recognize symptoms earlier when they present themselves. Only accessible through an online training

Remote Co-Design

Illustration A 6. Battito Storyboard Part 1

1. What's Battito?
Marta sees a Battito advertisement on her way to the grocery store. She wonders if she's at risk for CVD, but she dosen't feel ill or chest pain.

2. Friends
During an evening witn friends, Marta mentions to that she is feeling always exhausted. Her friends mention that she should try and measure her health.

3. Curiosity
Although Marta dosen't feel ill, her exhaustion is troubling her. She dosen't want to go to the doctor or wait so instead she is curious about Battito.

4. Signing up for the Service
Marta signs up for Battito on her smartphone. After inserting some personal details, she is able to locate pickup point for the HH devices.

5. Pickup of Blood Pressure Monitor
At her local pharmacy, Marta presents her Battito login; the pharmacists verifies and scans the blood pressure (BP) device and gives it Marta.
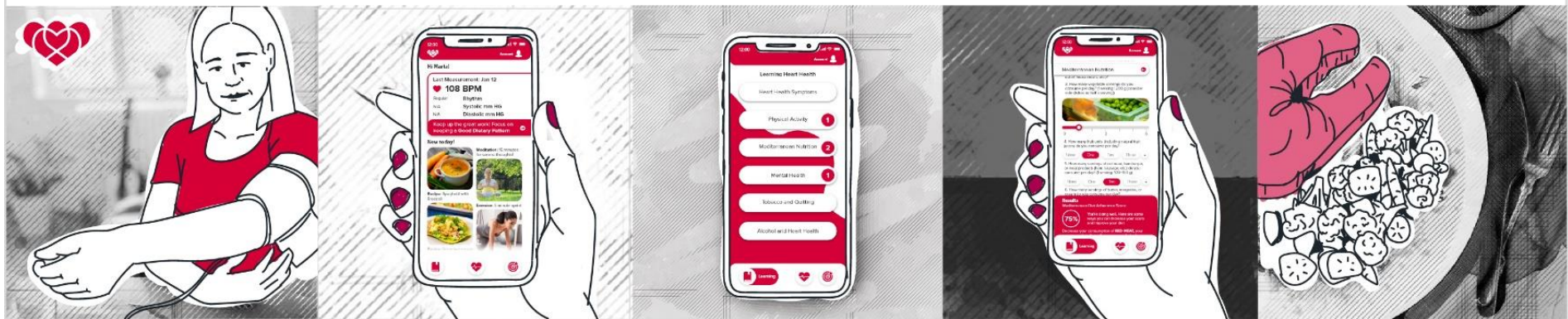
6. Learning about the device
Marta goes home and pairs her BP device to the smartphone. Battito instructs her on how to use the device and what it measures in her HH

7. Results
Marta takes her first reading outside the doctors office! The app notifies Marta that her reading is good but within the risk marker.

8. Preventative Behaviors
Battito suggests Marta can improve her health through various activities and exercises. Battito asks if Marta wishes to set a health goal for the future.

9. Lifestyle: Nutrition
Marta fills out information on the app about her eating habits; surprised she notices she is not actually following the Mediterrenean diet closely

10. Lifestyle: Nutrition
Marta follows dietary guidelines and notices to reduce her alcohol intake and to improve eating more nutrient rich foods like spinach or salmon

Illustration A 7. Battito Storyboard Part 2

11. Lifestyle: Physical Activity

Marta notices she is sedentary by Battito's readings. She wants to improve her health so she feel less exhausted all the time

12. Lifestyle: Physical Activity

Marta is linked to simple exercises and she begins doing some physical activity at home using the Battito app

13. Social Circle

As Marta becomes more familiar with HH, as a caretaker she is concerned with other people's health. Marta decides to talk with Ester, who smokes regularly

14. Social Circle

Marta meets Ester and they talk about how they have been feeling; Marta wants to help Ester and through the guest dashboard measures Esters' HH

15. Catching Issues

Ester's readings are very troubling with the ECG showing possible arrythmia. Battito advises that Ester to seek a medical professional to interpret results

16. Lifestyle: Tobacco

Marta also shows Ester infromation about tobacco cessation Ester is a bit hesitant to change but this scare troubled her and makes her reconsider.

17. Doctor

On Marta's visit to the doctor, she mentions that she is using Battito. With consent, the data from the phone is sent to the healthcare dashboard

18. Improved Visit

The doctor looks over the information and with the added data from Battito can see Martas improvements and preventative lifestyle

19. Rental Return

Marta returns the ECG device to the pharmacy. She recieves a notification that the return has been processed and she is eligible to try new devices

20. Lower CVD Risk

With Battito, Marta has learned lifestyle behaviros, measured her HH, understood risks and even reached others. She keeps using the Battito app.

Illustration A 8. Service Blueprint Part 1

Battito Service System

		Pre Service				Service			
Touchpoints	Physical	Publicity Campaign	Word of Mouth through friends			Battito HH Device Pharmacy	Battito HH Device	Battito HH Device	Other target users
	Digital	Social media Campaign		Management dashboard	Battito App	Battito App	Battito App	Battito App	
User Actions	Users diagnosed w/risk factor(s) of CVD	Recognition of the service	Friends discuss using Battito to measure HH		Receive Battito subscription as a treatment option	Receive Battito HH device through medical system	Pair HH device to App		
	Users unaware	Recognition of the service	Friends or Family measures HH using Battito		Sign up to Battito's service to understand health	Receive Battito HH device by pickup; understand lending		Measure family, friend or other significant other HH	Through measuring others, learns about HH and CVD risks
Front Stage Interactions	Battito's Platform		Displays guest interface and risk measurement	Display information about the service and usage	Sign up to Battito; provide medical details	Sign into Battito application; prompts pairing of device	Device is ready to use; instructions on proper measuring	Battito creates guest measuring to allow multiple profiles	Displays risk evaluation and suggestions
	Pharmacist & GP				Consult with patients at risk on usage of the service				
Back Stage Interactions	Battito's Platform				Creates database of those signed up to the service	Access database of login		Distinguishes profiles by having subscriber as admin	
	Pharmacist & GP			Recognition of service offering and usage with patients	Receive note of those subscribed to Battito	Keep Battito stock on relevant locations			
Hidden System Processes	Battito's Services	Digital promotion and physical diplays		Enroll physicians and pharmacists into service	Management of HH device inventory	Retrieves user medical risk profile		Receives data of other users; compiles network analysis	
	Pharmacist & GP			Learn about Battito usage and health tracking dashboard	Management of Battito dashboard				
	Healthcare System	Approval of the Battito initiative for public health				Receive data on people subscribing		Receives trends and data on relationships between individuals	Increased awareness among public
	System Stakeholders			Medical dashboard creation and record integration	Distribution of HH devices to various stakeholders				Social media following to increase curiosity in screening

Illustration A 9. Service Blueprint Part 2

Service					Post Service		
Battito HH Device			Battito HH Device	Dr. Office	Battito HH Device	Promotional Events	
Battito App	Battito App	Battito App	Battito App		Battito App	Battito App	Battito App
Measure self HH though various devices (such as ECG and blood pressure monitor)	Read about various ways to practive preventative lifestyle behaviors	Follows activities, nutritional guidelines and other advices	Remeasuing of HH through device after some time of practicing preventative behaviros	Discuss usage of Battito as a lifesyle aiding service / Discuss about HH; first conversation thanks to awareness	Returns HH device to either medical professional or drop off point	Possibility of linking health account to other services such as gym memberships etc.	Reduces risk of CVD incident through physical activity, good nutrition and other modifiable factors
Displays and explains results for HH	Provides guidelines for physical activity, diet and stress	Display of goals and other tailored metrics	Show progress and improvements; illustrate benefits		Return successful, user can upgrate to more time/devices		Option to gift or discontinue service
		Input of goals for patients at risk subscribed to service		Can recieve data and see user non-medical lifestyle			
Creates risk profile, tailors information based on readings	Research content is tailored based on user risk profile				Processes returns, opens account to borrow other device		Account deactivation; data sent to health system
Recieve information on dashboard for monitoring		Use dashboard to create plan of action for at risk patients	Observe progress of patients subscribed to service	Adding and tracking with consent on dashboard			
Process data for dashboard usage	Researching and curation of information	Sends dashboard data to application	Feedback on service adherence to improve information		Monitor usage of service and prevention efforts	Allows database to be accessible by trusted third parties	Proposal of new HH devices to relevant companies
Monitor at risk patients health				Access to non-subscribed users with consent	Marking devices in inventory		
Recieve population data	Provides HH information and guidelines		Updates in population data				Uses population data to make policy and funding decisions
	Design of activities and participation within the app				Management of HH devices, repair and maintenence		Increased offering of devices and new digital products

Illustration A 10. Battito Application Wireframes Part 1

Intro Screen
Other login options; Face ID, Fingerprint etc.

Screen for users already registered by doctor

First Login Section
Question mark icon helps user understand what reference number
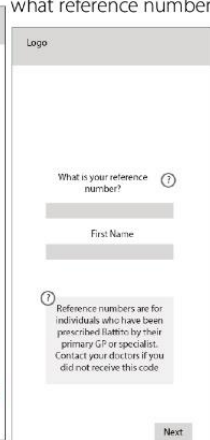
On-board explaining the purpose of questionnaire. Only filled out on first use

Question mark icon helps user understand what data is for
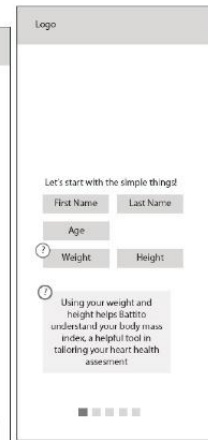
Questionnaire
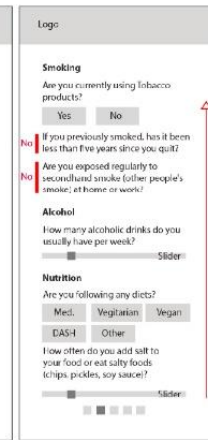
As answered, other questions populate. Information scrolls up
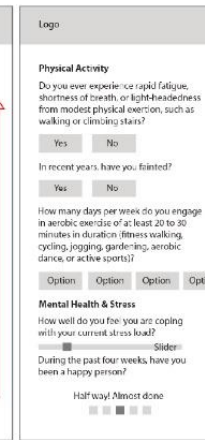
Once data from prior screen is filled, the page auto loads to the next section. User can go back by swiping at the bottom
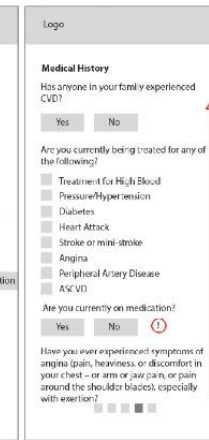
Main Dashboard
Home screen takes user information to populate information

Stories are populated by Battito, encouraging preventative lifestyle behaviors

Learning Section
Updated content receives badges

Topic Sub-selection

Once the user clicks a topic, after a fade transition, subtopics populate the screen. The top triangle refers the user to be returned to the main learning section screen. Fo the main three topics of diet, mental health and physical activity, Battito accompanies the learning with activities such as the guided meditation and the exercise sessions. For Tobacco and Alcohol, a "learn more" link is overlayed on the content to bring the user to other reputable sources and organizations.
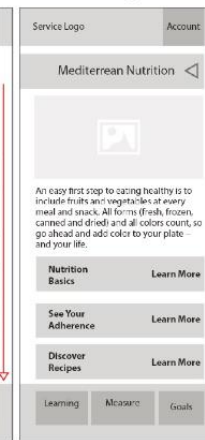
Illustration A 11. Battito Application Wireframes Part 2

Content is derived from reputable organizations and curated by the Battito team as part of the service offering to be accessible

Setting Goals
If measurable metric, progress is shown

Measuring Heart Health
User selection varies interfaces. Visualization of results for heart health is comprehensive, indicating various levels of detail to user. Call to action include doctor link, learn more and suggestions on improvement (preventative lifestyle behaviors) For guest users, the send to doctor is not available. Recommendations relink content to goals page, tailored home screen and history of results

Activity Examples
Activities are either video tutorials, interactive questionnaires with user initiated activities or quizzes on preventative lifestyle behaviors.
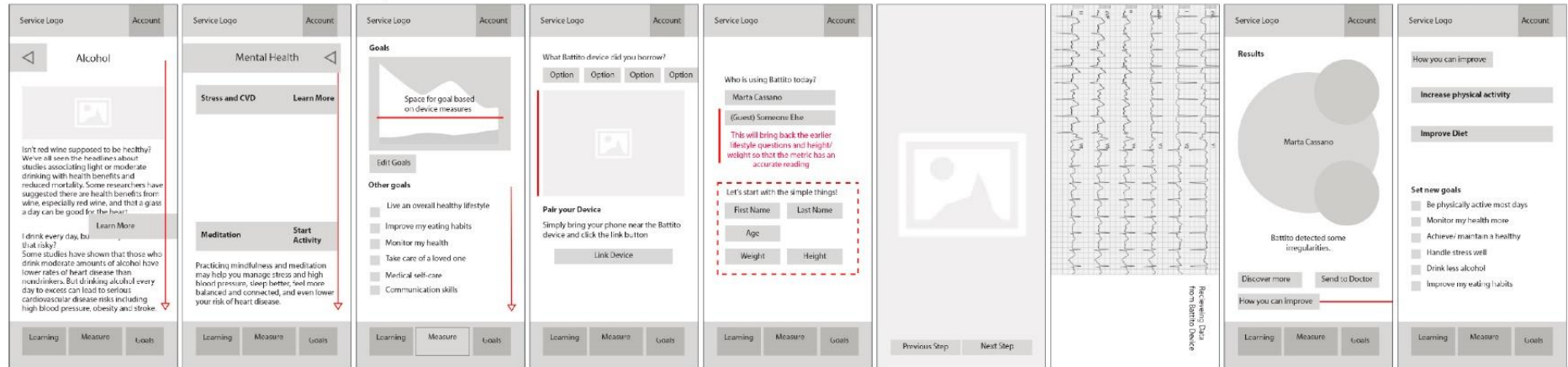
Settings/Account
Acts as overlay that drops down all the way to bottom so the user can always change settings on any page. Paying the premium plan unlocks the "Measure" feature which is otherwise unavailable to free users who aren't prescribed Battito. Editable sections that mimic the introduction questions so the user can update changes as needed. History of results shows various graphical visualizations. Data and Link page allow user to set their privacy settings and connection to the healthcare system

Illustration A 12. Battito Application Prototype Sample 2

Visual Tutorials

This screen shows the blood pressure monitor being worn on the upper arm with instructions on placement and fit

Next Step

Previous Step

Remove Battito's adhesive backing and securely press on upper chest, in these locations

4 Make sure the Blood Pressure monitor is placed correctly

Previous Step   Next Step
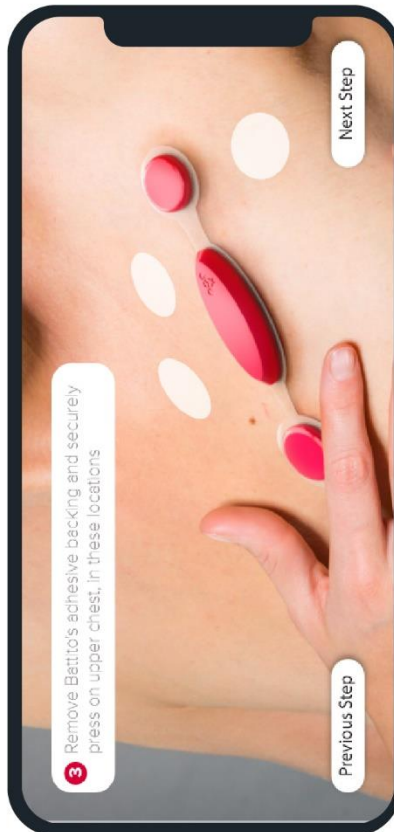
Visual Tutorials

Step by Step guided instructions on usage of the various Battito linked devices. In this screen, the ECG is placed on the chest with instructions on the correct location

The Mediterranean Diet

The users answers simple dietary questions and the data is used in a program similar to that described in the medical field (Panagiotakos et al., 2006) to sythesize the level of nutrition

12:00   Account

Mediterranean Nutrition

First Steps

An easy first step to eating healthy is to include fruits and vegetables at every meal and snack. All forms (fresh, frozen, canned and dried) and all colors count, so go ahead and add color to your plate – and your life.

Nutrition Basics
Explore More

See your Diet Adherence
Take the Assessment

Healthy Recipes
Learn More

Learning

12:00   Account

Mediterranean Nutrition

out-of-house meals, etc.)?

3. How many vegetable servings do you consume per day? (1 serving : 200 g [consider side dishes as half a serving])

0   3   6

4. How many fruit units (including natural fruit juices) do you consume per day?

None   One   Two   Three   +

5. How many servings of red meat, hamburger, or meat products (ham, sausage, etc.) do you consume per day? (1 serving: 100–150 g)

None   One   Two   Three   +

6. How many servings of butter, margarine, or cream do you consume per day?

Results
Mediterranean Diet Adherence Score:

75%   You're doing well. Here are some ways you can increase your score and improve your diet

Decrease your consumption of **RED MEAT**, your

Learning

Improving Nutrition Understanding

Battito uses three ways to increase proper nutrition amoung users: understanding at a macro level nutrition, an assessment to determine the users adherence and recipes to promote healthy eating

Illustration A 13. Battito Application Prototype Sample 3

Helping others

One of Battito's core offerings is the dissemination of information through measurement. Through a guest account, users can administer readings to loved ones and get accurate results

Electrocardiogram

The ECG captures various data metrics that are crucial for Battito to determine a risk level. All data is recorded in case a medical professional needs access to records at a later point

Lifestyle Changes

Once Battito gives the user a risk assesment, the app provides tailored information based on the intro question-naire and the users data to suggest effective reccomendations
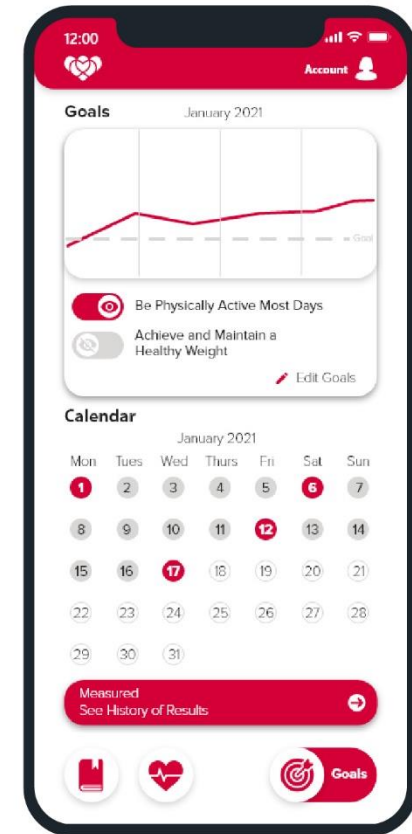
Goals and Calendar

Battito's calendar allows for users to track past measurements, stay motivated towards lifestyle changes and see a history of physiological changes. Toggles allow users to view multiple goals quickly on the same screen

Illustration A 14. Battito Application Prototype Sample 4

Built in Preventative Lifestyle Behaviors

Battito users benefit from having exercise suggestions, recipes and mental health services integrated into the app. This provides a holistic set of services to diminish the risk of CVD

Subscription

Users here can manage their subscriptions, upgrade to premium and see locations for the drop off/pickup of heart health devices. They can also view their lending period and device ID

Battito

Welcome, please fill in some details so we can optimize your experience!

First Name | Last Name

Your Age

Weight (in kg.) | Height (in m.)

? Your weight and height helps Battito understand your body mass index (BMI), a helpful tool in accurately assessing heart health

Physical Activity

Start 5 minute Exercise Sprint

Start 15 minute Exercise Session

Start 25 minute Exercise Session

First Steps

Start slowly. Gradually build up to at least 30 minutes of activity on most or all days of the week (or whatever your doctor recommends).

Exercise at the same time of day so it becomes a regular part of your lifestyle. For example, you might walk every Monday, Wednesday, Friday, Saturday and

Heart Health Symptoms

Understanding Symptoms

Women are more likely than men to experience some of the other common symptoms, particularly shortness of breath, nausea/vomiting and back or jaw pain

Heart Attacks — Learn More

Stroke — Learn More

Cardiac Arrest — Learn More

Other Heart Conditions — Learn More

Learning

Subscription Settings

Premium Plan — $ TBD
Paid until February 28, 2021 — x Month

Includes access to Battito's network of Heart Health devices so you can measure your health and better understand the symptoms
Option to link to Healthcare system and send data to doctor/specialist

Marta Cassano
Borrowing: ECG Device Double Lead 000927

Return Date by February 15, 2021

Doctor/ Specialized Prescribed Option
Free Premium Plan — Read More

Free Account — No Measure Option

Find Battito locations near you

Pickup | Drop Off

First Login

Battito onboards users though a quick set of questions regarding lifestyle and prior medical conditions

Understanding HH Symptoms

Curating various medical sources and experts, Battito's interface familiarizes women with key symptoms and early signs of CVD; each topic links to further information and subtopics

Illustration A 15. Battito Application Prototype Sample 5

Activities 2

Battito's content is flexible and tailored, allowing for various levels of intensity based on the users questionnaire answers. The content is reviewed and curated by experts

Lunges   Time Left   ● 2:45
Next: Squats

9

Next: Crunches
Plank

Time Left ● 0:38

Hold Position

Activities

Battito lets users follow a series of activities based on Musumeci's (2016) suggestions on integrating movement throughout the week to achieve the 150 minutes of moderate intensity reccomended by health guidelines

12:00   Account 👤

Current Stress

😐   😟   😞
I need a   I'm feeling   I'm feeling
little boost   down   distraught

Session Time

Now Playing:
Sunrise Emotions Audio

✕ Guided Meditation

Meditation

To lower stress levels, Battito offers simple mental exercises that focus on the findings of Dar et al., (2019), who states an approach of mindfulness-based stress reduction

Recipes

Battito aims on improving users adherence to the MED diet by suggesting easy to follow recipes that emphasize increase in vegetable and fruit intake, olive oil consumption and foods low in sat and trans fat

12:00   Account 👤

Recipes ⬅

Parmesan and Zucchini GF 🌱 🥗

2 Portions   15 Mins   Easy   Tailored for You

Ingredients

Directions

a large bowl, stir together the zucchini, shallot, ggs, flour, Parmesan, thyme, baking powder, and epper until well combined.

In a large nonstick skillet, heat 1 teaspoon oil over medium heat, swirling to coat the skillet. Place **eight 1/8-cup mounds** of the zucchini mixture in the skillet. **1/2-inch thick and 2 1/2 inches in** diameter.

Cook for **3 to 4 minutes on each side**, or until golden brown all over. Transfer the pancakes to a plate. Cover to keep warm. Repeat with the remaining 1 teaspoon oil and zucchini mixture. Let the pancakes cool for 5

📖 Learning   ❤️   🎯

Illustration A 16. Battito Business Model Canvas

Key Partners

Device manufacturers provide the required HH focused technological devices

Pharmacies are key partners serving as physical delivery drop off and pickup for Battito enabled devices

The Italian government is a key partner as it approves the program as preventative solution and provides funding for the initiative.

Battito also works with social campaigns to bring awareness of the service and to promote the testing of heart rate and blood pressure regularly

Key Activities

Battito requires the production of a digital platform for the dissemination of information, the tracking of health data and the management of profiles. Battito also requires the technological expertise to link HH devices to the digital platform. Similarly, Battito's data is sent to the healthcare records system

Key Resources

Battito requires devices such as an ECG and heart rate monitor to deliver HH care to women. Secondarily, Battito requires expert medical professionals to craft the content so that it is accessible and understandable to users. Battito also requires touchpoints to disseminate the products and for re-collection.

Value Proposition

Italian Women

Battito allows Italian women to access HH medical equipment without the full purchase cost. Battito allows women to track HH easily and without necessarily needing medical professionals and increases preventative lifestyle behaviros, providing better health and symptom recognition

Doctors

Battito provides doctors a more complete medical histroy and contextual information for patients enrolled in the service. Improves patient communication with better teminology and increases the likelyhood of early diagnosis and treatment

Healthcare System

Cost cutting through population data for better policy interventions and allocation of healthcare resources

Customer Relationships

Battito work with Italian women at risk of CVD and those with already diagnosed HH conditions. Since Battito works on the power of peoples personal networks and relationships, most of the service is automatic and digital. Interactions happen through our digital companion app or with medical professionals who reccomned the service

Channels

Battito is a digital service and as such is promoted though online channels and medical platforms. Battito also will leverage social media for the promotion and awareness of HH

Secondarily, Battito is distributed through pharmacies and from doctors (once users are member or registered to Battito)

Customer Segments

Battito's main target demographic are Italian women with low levels of educational attainment (as defined as having a high school degree or lower). Besides this segment, Battito targets all Italian women whom are adults, regardless of educational attainment. Given the importance of preventative behaviros and habits, as the AHA demonstrates, there are two main targets, those 20 to 39 years old and those 40 to 75 years old given the elevated risk profile (Arnett et al., 2019)

Cost Structure

Battito pays for the medical devices from manufacturers like Johnson and Johnson, Medtronic, Philips, etc., These devices are either custom made or integrated to the Battitio service system. Battito also employs employees who maintain the HH devices functionality and sanitation so that they can be borrowed by other users. Battito hires expert consultants to craft the various content found on the digital companion application.

Lastly, Battito pays for the digital infastructure of the system and for any campaign/promotional efforts.

Revenue Streams

Battito earns revenue through various channels; Battito earns through subscription fees linked to premium accounts that allow women to borrow a larger selection of equipment for longer periods of time. Secondly, Battito is paid by the Italian govenrment for the HH data collected and if linked preventative efforts show a reduction in healthcare costs.

The market size is estimated at around **4,230,000.** This calculation is done by looking at Istat (Italian National Institute of Statistics) Using the 2018 data regarding the following group of women, 25 - 44 , 45 - 64 and 65 plus who have hypertension or heart problems and have earned less than or a high school diploma. This calculation can be increased if non at-risk users join Battito's service offering

Illustration A 17. Battito Product Prototype

2 Lead ECG Patch Concept

Place

Adhere

Measure

Double Lead Sensor, allows for increased accuracy

Central housing for battery and wireless transmitter

Sweat resistant, repositionable adhesive (replaced between users)

Wireless Blood Pressure Cuff

All-in-one syncs to smartphones wirelessly; provides instructions on usage and real-time readings on screen

Adjustable cuff size for upper arm; can be utilized by a variety of users. Cuff is removable and disposable from body

Low profile pressure sensor and micro air pump and valve system for compact object footprint
USB C - Charging

Nome	La vostra eta	Quante ore lavora durante la settimana?	Livello di Istruzione ottenuto	Fumi sigarette?	Qual è stata l'attività più impegnativa fisicamente questa settimana? Cosa stava facendo? Come se sentita?	Quali problemi di salute le fanno paura? Cosa fa per evitarli/diminuire il rischio?	Com'è la sua relazione con il suo dottore/dottoressa? Ci potrebbe raccontare di qualche aspetto negativo o positivo?	Come ricerca o a chi chiede quando ha domande sulla salute?	In generale, cosa pensa causa le malattie cardiache?	Ha parlato con il suo medico di base delle malattie cardiache? In tal caso, com'è stata l'esperienza? Cosa le hanno detto?	Quali sintomi pensa di provare se avesse un problema cardiaco?
Antonella	51-60	NON lavoro	Diploma Medie	NON fumo	Non potendo uscire..... Pulizie e TV, apatica triste e nervosa, vivo sola con la gatta... normalmente palestra tutte le mattine pilates posturale e zumba per sudare, camminate minimo 6 km trekking una volta a settimana 6/7 ore di cammino,mi sento bene fisicamente e mentalmente stare insieme alle persone e la cosa migliore per tutti	Nessuno, non prendo farmaci per ora, sono certa che la mia attività motoria mi aiuta ad avere il colesterolo nella norma e mantenere bassa la mia pressione sanguina	Non vado quasi mai, nessun problema se faccio richiesta di una visita, direi positivo, ma ora mi sembra che i medici siano più degli impiegati, dei burocrati, passano più tempo sul PC a compilare moduli che a visitarti, esperienza personale al ps 5 minuti per visitarmi 15 a compilare il referto...	Vado dal medico	Il cibo credo sia la causa principale, io none il sovrappeso o obesità	Certo, mia madre ha problemi mi ha fatto fare gli accertamenti del caso, tutto perfetto	Credo che mi spaventerei se facendo le scale avessi palpitazioni o affanno
Ingrid Raponi	31-40	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	Fumo più di 10 sigarette al giorno	Le scale, un po' di affanno	Problemi polmonari , ma non riesco a smettere di fumare	Non ho un medico di riferimento	Ai miei colleghi	Che si sviluppano prevalentemente dopo i 50 anni	No	Affaticamento, dolore
Manuela Girelli	51-60	20 - 30 ore (Tempo Parziale)	Laurea / Laurea Magistrale	NON fumo	Camminata veloce sai 6 km/ ora(prima del coprifuoco) Mi sentivo bene	Tumore Cerco di fare una vita compatibilmente sana	Sono anche io nel campo sanitario Lo frequento per farmi prescrivere analisi e controlli di routine e chiedere farmaci se ho qualche patologia sporadica e per le mie patologie abituali	A me stessa, al medico di base e a mia cugina medico	Ipercolesterolemia, fumo, sedentarietà, pressione alta, abuso di alcol, stress.Soprattutto	Mai	Affanno, angina, formicolii diffusi, edemi agli arti
Silvia	51-60	NON lavoro	Laurea / Laurea Magistrale	NON fumo	Questa settimana il massimo che ho fatto è salire le scale del palazzo. E fare la spesa. Mi sento bene.	Cerco di fare una vita serena, ho smesso di fumare 4anni fa, mangio frutta e verdura, bevo poco. Sono piuttosto sana.	Col mio medico di base ho pochi rapporti. Le volte che sono stata male è stato d'aiuto mandandomi da specialisti.	Chiedo ad amici medici.	Cosa penso causi malattie cardiache? Direi :familiarità, condotte di vita poco sane (fumo, alimentazione eccessiva, sedentarietà) e forse stress.	No, non ne ho mai parlato.	Senzo di oppressione al petto, nausea, dolori suppongo.
Paola	31-40	30 - 40 ore (Tempo Parziale - tempo Pieno)	Laurea / Laurea Magistrale	NON fumo	Cyclette. Molto bene	Problemi cardiovascolari (prima di epidemia). Attività fisica giornaliera (corsa e camminate) alimentazione sana	Nessuna relazione.	Sono infermiera e biologa, se non riesco a trovare la soluzione mi affido alla mia rete di contatti (medici e altri professionisti della salute)	Scorretti stili di vita, ma anche una certa predisposizione genetica	No	Stanchezza, aritmia, dispnea, dolore toracico, difficoltà digestive
Cristiana	41-50	30 - 40 ore (Tempo Parziale - tempo Pieno)	Diploma Liceo / Istituto tecnico	NON fumo	Ho eseguito il workout di mio figlio, judoka agonista, per 20 minuti. Mi sono sentita benissimo e piena di energia.	Mi fanno paura le malattie degenerative, sia fisiche che cognitive. Dove posso, cerco di migliorare me mie abitudini.	Vedo raramente il mio medico, difficilmente mi ammalo.	Mi informo da fonti attendibili.	Penso vu siano diverse cause, alimentazione, genetica, stile di vita, fattore ambientale...	Non mi sono mai confrontata col medico sulle malattie cardiache.	Non saprei proprio, forse un malessere diffuso.
Camelia	31-40	30 - 40 ore (Tempo Parziale - tempo Pieno)	Laurea / Laurea Magistrale	NON fumo	Il lavoro...ho passato tante ore in piedi. Mi sono sentita esausta	Stress,malattie professionali, malattie cardiovascolari...mi proteggo al lavoro, alimentazione attenta	Negativo: poco impegno nella vita del paziente, assenza di un rapporto continuo con il paziente, difficoltà nel stabilire le priorità assistenziali	Lavoro in ospedale...colleghi di lavoro/specialisti, leggo su siti di specialità	Fattori ereditari, stile di vita sregolare (alimentazione, stress, assenza di attività fisica, droghe, alcol)	No ho parlato	Cuore che batte a mille all'improvviso, affanno, difficoltà a respirare, stanchezza dopo sforzi non importanti,arti gonfi, giramenti di testa, mal di testa, dolore toracico sinistro/braccio sinistro ecc
Daniela	51-60	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	NON fumo	Ginnastica in casa. Tutto bene	Ictus. Sono ipertesa e in terapia	Relazione di fiducia	A mia figlia	Obesità, colesterolo alto, scarsa attività fisica, ipertensione	Sono in cura per l'ipertensione.	Dolore retrosternale
Silvia	51-60	40 + (Tempo Pieno - Straordinari)	Diploma Liceo / Istituto tecnico	Fumo più di 10 sigarette al giorno	Portare a casa la spesa . Stanca ma bene	Il cancro . Sono fatalista faccio la vita di sempre	Positivo xe X fortuna l'ho vista pochissime volte	Internet	La famigliarità, la rabbia , la cattiva alimentazione	Mai	Dolore al petto , al braccio , aritmie, fiato corto , colorito bluastro
Martina	18-30	30 - 40 ore (Tempo Parziale - tempo Pieno)	Laurea / Laurea Magistrale	NON fumo	Ginnastica in casa. Mi sono sentita bene una volta conclusa la sessione	problemi neurologici. Tengo la mente allenata, leggo	Buon rapporto, quasi un componente della famiglia.	Ai genitori (ho il padre radiologo) e guardo su internet sapendo quali sono i limiti	genetica, cattivo stato di salute	Non ho familiarità né ho comportamenti che potrebbero pensare che possa diventare un problema	aritmia, senso di affaticamento, tachicardia, bradicardia

Nome	La vostra eta	Quante ore lavora durante la settimana?	Livello di Istruzione ottenuto	Fumi sigarette?	Qual è stata l'attività più impegnativa fisicamente questa settimana? Cosa stava facendo? Come se sentita?	Quali problemi di salute le fanno paura? Cosa fa per evitarli/diminuire il rischio?	Com'è la sua relazione con il suo dottore/dottoressa? Ci potrebbe raccontare di qualche aspetto negativo o positivo?	Come ricerca o a chi chiede quando ha domande sulla salute?	In generale, cosa pensa causa le malattie cardiache?	Ha parlato con il suo medico di base delle malattie cardiache? In tal caso, com'è stata l'esperienza? Cosa le hanno detto?	Quali sintomi pensa di provare se avesse un problema cardiaco?
Ivana G.	61-70	NON lavoro	Diploma Liceo / Istituto tecnico	NON fumo	spesa, molto bene	ictus, emoragia cerebrale, sla , nulla	solo ricete	Nutrizionista biologa	fumo,	no	dolore stomaco, braccio, mancanza fiato
marilena	61-70	NON lavoro	Diploma Liceo / Istituto tecnico	Fumo meno di 5 sigarette al giorno	pulizie domestiche sentita benissimo	forme tumorali cerco di fare vita sana	positivo non lo conosco quasi solo x ricette di mio marito	internet o amiche	obesità, fumo alcool	non ne ho parlato	dolori allo sterno affanno estremità con gonfiore
Donatella	51-60	NON lavoro	Diploma Medie	NON fumo	Cyclette mi sono sentita affaticata	Sicuramente l'infarto e faccio controlli periodici	Rapporti ottimi ho pienamente fiducia	Al io medico o al farmacista	Familiarità sovrappeso ipertensione e l'ansia la patatina mi sono coperto	Di fare una dieta e di fare movimento	Dolore al petto
Violetta	18-30	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	Fumo tra 5 e 10 sigarette al giorno	Ho pulita tutta casa, mi sono stancata!	Non ho una paura in particolare. Provo a non esagerare nel cibo schifezza e in tutto il resto	Non ci vado spesso. Il lato positivo è che ha la segretaria che prende gli appuntamenti non telefonicamente, quindi è sempre raggiungibile!	Chiedo al medico di base o alla ginecologa	La mancanza di ossigeno al cuore	No, non ne ho mai parlato	Una mancanza di ossigeno e la tachicardia
Lina	61-70	NON lavoro	Diploma Liceo / Istituto tecnico	NON fumo	In casa	In questo momento la polmonite	Ci vado molto poco dal medico	Al mio medico	Gli sforzi	Non ho parlato con il mio medico	Male al petto come una stilettata
Michela	31-40	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	NON fumo	Allenamento - bene	Tumori - cerco di condurre una vita sana	Non ho particolari rapporti con il mio medico di base, non nutro molta fiducia nei suoi confronti. Mi rivolgo a specialisti	Specialisti	Vita sedentaria - cattiva alimentazione - problemi congeniti	No	Battito irregolare
Anna	61-70	NON lavoro	Diploma Liceo / Istituto tecnico	NON fumo	labare i vetri di casa	malattia mentale	positivo	cerco di internet o chiedo al mio medico	affaticamenti ansia e familiarità	mi ha inviato dal cardiologo	respiro affaticato o msncsnza ddi respiro ibrespiro o dolore al petto!!
Donatella	51-60	30 - 40 ore (Tempo Parziale - tempo pieno)	NON ELENCATO	NON fumo	Faccende domestiche bene	Tumori - sana alimentazione e camminate	Relazione buona - mi piacerebbe avere un po' più di attenzione	Medico	Stress , obesità e familiarità	Non ne ho parlato nello specifico	Spossatezza e dolori al petto
N'tumba Wa Kalombo Jlunga	41-50	30 - 40 ore (Tempo Parziale - tempo pieno)	Diploma Liceo / Istituto tecnico	Fumo tra 5 e 10 sigarette al giorno	fare la spesa/pulizie domestiche	stress-ho un cane e vado a passeggio	ho pochi problemi di salute e per fortuna tutti risolvibili	ascolto il mio corpo e cerco di individuare bene i sintomi poi vado dal medico se serve	il cibo il fumo la sedentarietà (faccio un lavoro sedentario)	in un periodo di forte stress ho avuto tachicardia per tre giorni mio padre ha avuto un attacco di cuore a 66 anni - ma non ho approfondito	senso di soffoco al petto e aritmie cardiache
Berta	41-50	40 + (Tempo Pieno - Straordinari)	Diploma Liceo / Istituto tecnico	NON fumo	Corsa 10km / da Dio	Tutti / Tutto	Relazione epistolare	Amici medico	Cattive abitudini	No	Non so
Erica	41-50	30 - 40 ore (Tempo Parziale - tempo pieno)	Diploma Liceo / Istituto tecnico	Fumo meno di 5 sigarette al giorno	Difficile fare attività fisica in questo periodo..di solito cammino molto, ora no	tumore/cerco di mangiare cibo sano e non fumare troppo	Cerco di evitare di andare dal medico, lunghe attese e visite distratte. Mi dico sempre che dovrò cambiarlo ma non lo faccio mai per il poco tempo.	Internet, esperienze passate di amici, se strettamente necessario vado dal medico	Stile di vita sedentario, cattive abitudini alimentari, stress	non ne ho mai parlato	dolore al braccio sinistro, palpitazioni, giramenti di testa, svenimenti, rossore in viso, labbra viola
Patrizia	51-60	NON lavoro	Diploma Liceo / Istituto tecnico	Fumo più di 10 sigarette al giorno	Purtroppo questa settimana solo lavori in casa	Ictus	Complessivamente buona	Al medico	Stress, predisposizione genetica	No	Dolore al petto
Alessandra	51-60	30 - 40 ore (Tempo Parziale - tempo pieno)	Laurea / Laurea Magistrale	NON fumo	Pulizia dei vetri a casa	Malattie degenerative. Cerco di seguire stili di vita virtuosi	Buono, una persona accogliente e disponibile	Chiedo a un medico	Sono molto diffuse, e pericolose no	No	Dolore fortissimo
Federica	18-30	30 - 40 ore (Tempo Parziale - tempo pieno)	Laurea / Laurea Magistrale	NON fumo	Palestra, battito veloce	Fare sport e controllare la dieta	Medici in famiglia	Medici in famiglia	Genetica, fumo, colesterolo, sedentarietà	No	Non so
Monica	41-50	30 - 40 ore (Tempo Parziale - tempo pieno)	Laurea / Laurea Magistrale	NON fumo	Scale, affannata	Ictus, tumore. Non fumo, prendo farmaci per pressione alta	Serena, mi fido di lei vorrei mi spronasse di più a non tenere comportamenti alimentari scorretti	Dottoressa di famiglia, amica biologa, internet solo per informazioni	Alimentazione scorretta, scarsa attività fisica, fumo, disfunzioni tiroidee, ansia	Poco che non devo preoccuparmi mi ha fatto fare ecocardiogramna e dato una pastiglia	Affanno, tachicardia, tosse stizzosa, dolore al braccio sinistro.
Laura	41-50	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	NON fumo	Imbiancatura/ soddisfatta	Tumore/ evito fumo e alcool + Alimentazione scorretta	Buona: negativo i tempi di attesa	Agli esperti	Predisposizione famigliare e fisica	Con un genetista ho approfondito l'argomento	Aritmia
Micky	51-60	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	Fumo tra 5 e 10 sigarette al giorno	Ginnastica e scale....benissimo	Ictus...	Tutto ok	Medico Tanti fattori	Tanti fattori	Di stare tranquila	Dolore al braccio e al petto

Nome	La vostra eta	Quante ore lavora durante la settimana?	Livello di Istruzione ottenuto	Fumi sigarette?	Qual è stata l'attività più impegnativa fisicamente questa settimana? Cosa stava facendo? Come se sentita?	Quali problemi di salute le fanno paura? Cosa fa per evitarli/diminuire il rischio?	Com'è la sua relazione con il suo dottore/dottoressa? Ci potrebbe raccontare di qualche aspetto negativo o positivo?	Come ricerca o a chi chiede quando ha domande sulla salute?	In generale, cosa pensa causa le malattie cardiache?	Ha parlato con il suo medico di base delle malattie cardiache? In tal caso, com'è stata l'esperienza? Cosa le hanno detto?	Quali sintomi pensa di provare se avesse un problema cardiaco?
Marina	41-50	30 - 40 ore (Tempo Parziale - tempo Pieno)	Diploma Liceo / Istituto tecnico	NON fumo	Vista la quarantena le grandi pulizie. Mi sono sentita stanca, dolori alle gambe e braccia, ma penso sia dovuto anche alla menopausa, periodo delicatissimo il mio corpo si è trasformato, soffro di insogna e soossatezza	Malattie invalidanti, sla, sclerosi multipla..... Mangio sano non fumo e non bevo	Nel 2006 sottovalutó il mio stato di salute nonostante gli evidenti sintomi, ho iniziato il mio calvario a maggio, il corpo di riempiva di pomfi caldi, dolori addominali, emorroidi, non trovando riscontri positivi mi sono rivolta ad uno specialista, sono stata operata d'urgenza, adenomioma colecistico e appendicite.	Medico di famiglia o medico specialista	Cattive abitudini, fumo, alcol, cibo, spazzatura, scarsa attività fisica ereditarietà	No non ho mai avuto modo di affrontare l'argomento	Dolore al petto e braccio sx
Elisa Penna	31-40	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	Fumo più di 10 sigarette al giorno	Allenamenti corpo libero ,mi sono sentita pesante	Ictus,problemi legati alla salute mentale	La mia dottoressa è molto preparata ed empatica	Sempre alla dottoressa	Fumo e poca attività fisica	Sì,ho spesso tachicardia.ho fatto vari controlli ma risulta tutto ok	Tachicardia
Alessandra	18-30	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	Fumo meno di 5 sigarette al giorno	Lezione di power yoga. Stanca ma felice	Problemi cardiovascolari. Faccio attività fisica	Lo vedo una volta all'anno circa. Sempre disponibile	Google, amici medici, dottore	Genetica, cattive abitudini di vita	No mai	Affanno ma non saprei bene
Daniela	31-40	30 - 40 ore (Tempo Parziale - tempo Pieno)	Diploma Liceo / Istituto tecnico	NON fumo	Ginnastica , mi sono sentita bene	Cancro, mangio sano e faccio sport	Buona , molto disponibile	Al mio medico curante	Fumo , ereditarietà	Non ne ho mai parlato	Dolore formicolio
Agata	51-60	NON lavoro	Diploma Medie	NON fumo	pulire casa	cuore	buono	dottore di famiglia	non so	no	attacchi cardiaco
Graziella	61-70	NON lavoro	Diploma Medie	NON fumo	8 piani di scale a piedi 2 volte al giorno, un po' di affanno e accelerazione battito, ma recuperato in pochi secondi	Ipertensione e colesterolo sotto controllo con farmaci quotidiani	Direi normale mi fa fare controlli periodici	Qualche ricerca in internet e il mrdico di famiglia	Ipertensione, colesterolo	Non ne ho parlato	Dolore al petto
Sara	31-40	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	Fumo meno di 5 sigarette al giorno	Ho pulito i vetri perché siamo in quarantena e sono stata bene	Ictus, niente	L'ho cambiato un anno fa e non l'ho mai né visto né sentito	Al dottore	La vita	No	Senso di pesantezza al petto, problemi digestivi
Camilla Simona Vitaloni	51-60	30 - 40 ore (Tempo Parziale - tempo Pieno)	Diploma Liceo / Istituto tecnico	Fumo tra 5 e 10 sigarette al giorno	Ho pulito i vetri e alla fine ero molto affaticata	Sono una donna malata ho il morbo di Addison la sindrome di Smith e la fibromialgia mi curo e vivo la mia vita	Il mio dottore di base è molto sintetico con la mia endocrinologa invece si informa sempre sul mio stato di salute 4 anni fa circa stavo morendo l'hanno contattata era fuori Milano ed è rientrata subito	Alla mia endocrinologa o ad una mia amica neurologa	Non saprei forse una vita molto stressante, il fumo.....	No non ne ho parlato	Pressione al petto formicolio al braccio sinistro
Annalisa	31-40	30 - 40 ore (Tempo Parziale - tempo Pieno)	Diploma Liceo / Istituto tecnico	Fumo tra 5 e 10 sigarette al giorno	Lavoro	Cancro	Buono	Internet	Stress, cibo, fumo	No	Non lo so
Laura	41-50	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	NON fumo	S'è sentita! Giardinaggio.	Patologie croniche. Alimentazione adeguata, integrazione, esercizio fisico, detossificazione.	Vado raramente dal medico.	Studio da anni, mi informo su libri, siti internet.	Alimentazione inadeguata, sedentarietà.	No , mai parlato.	Potrebbe essere anche asintomatico, dipende dal problema cardiaco.
Giada	18-30	40 + (Tempo Pieno - Straordinari)	Diploma Liceo / Istituto tecnico	Fumo tra 5 e 10 sigarette al giorno	Lavorando, stanca	La demenza senile	Il rapporto con la dottoressa ottimo è molto brava, unica pecca è sempre in ritardo.	La dottoressa di base	Lo stress, affaticamento e lo stile di vita	Per adesso non ne ho ancora parlato	Dolori al petto
Elisabetta	51-60	30 - 40 ore (Tempo Parziale - tempo Pieno)	NON ELENCATO	NON fumo	Pulizie di casa	Tumori	Lunga attesa dal medico	Chiedo ad amici che hanno avuto più o meno stesso problema. Mai internet	Stress. Colesterolo. Fumo. Obesità	No	Dolore precordiale
Edda	61-70	NON lavoro	Diploma Liceo / Istituto tecnico	Fumo più di 10 sigarette al giorno	un po' stanca per lavori che si fanno solo in certe occasioni visti purtroppo i tempi	ovviamente i tumori e faccio poco per evitarli visto che fumo e faccio poca attività spirtiva	il mio dottore è un po' burbero e da prendere con le pinze, però è bravo	mi arrangio e se non risolvo ...medico	non penso niente ma la mia famiglia è soggetta	sono seguita da un importante ospedale ma non c'è sempre e solo un medico quindi si fa la visita e basta, in ogni caso ricevo le informazioni in modo esaustivo	dolore al petto

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Barbara	41-50	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	Fumo meno di 5 sigarette al giorno	Fitness con YouTube. Mi fa sentire da dio visto che sono a casa a lavorare dal 24 febbraio 😭😭	Diabete. Non faccio nulla… spero che non mi venga e basta 😄	Positivo: sa sempre tutto ed è super preciso. Negativo: nessuno	Inizio con Google, poi chiamo il medico.	Ereditarietà, vita sregolata, colesterolo, obesità	No mai	Affanno, stanchezza
Stefania	31-40	20 - 30 ore (Tempo Parziale)	Laurea / Laurea Magistrale	NON fumo	Portare la spesa a casa, un po' affaticata	Infarto e tumore	Vado solo per esigenze; aspetto positivo perché trova sempre cure efficaci individuandone il problema	Internet, medico di famiglia	Cattiva alimentazione, cattive abitudini, stress, predisposizione genetica	No mai	Non saprei
Maria	61-70	Meno di 20 ore per settimana	Diploma Medie	NON fumo	Sono in casa	Le malattie delle ossa	Mi trovo bene	Al mio medico curante	I comportamenti scorretti di alimentazione	No non ne ho parlato	Fitta al petto
Silvana	61-70	NON lavoro	Diploma Liceo / Istituto tecnico	NON fumo	Nessuna attività impegnativa	Tumore alla gola…non fumo	Vado raramente dal medico…cmq è un medico molto asciutto…di poche parole….però lo reputo competente	Allo specialista	Ansia stress e predisposizione famigliare	Ho la pressione ballerina quindi mi ha detto di tenerla sotto controllo provandola quasi tutti i giorni	Battito accelerato e respiro corto
Vannessa	18-30	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	NON fumo	Mantenere impegnato mio figlio cuida a casa inventandomi attività da fare dentro casa senza che lui mi chiedesse di uscire poiché non possiamo uscire	Attualmente il coronavirus ed è x questo che evito e prendo le giuste precauzioni	Negativa la segretaria non disponibile di positivo che la dottoressa compensa con le visite complete	In farmacia	L'alimentazione eccessiva di fritti carne rossa e il fumo la contaminazione e le preoccupazioni su cose che ci stanno a cuore ma che ci fanno male	Non ho mai chiesto niente a riguardo	Un forte dolore al petto come se mancasse il respiro penso
Marika	31-40	40 + (Tempo Pieno - Straordinari)	Diploma Liceo / Istituto tecnico	NON fumo	Esercizi misti presi da YouTube. Legata e fuori forma	Dolori cronici. Cerco di tenermi attiva	La vedo veramente poco. L'ho cambiata recentemente perché quella prima non c'era mai. Sempre sostituti.	Qualche volta chiedo ad un mio amico che lavora nella farmaceutica	Fumo, sovrappeso, stress	Non ne ho mai parlato	Dolore al braccio sinistro. Un senso di mal di stomaco/nausea
Giorgia	31-40	20 - 30 ore (Tempo Parziale)	Diploma Liceo / Istituto tecnico	NON fumo	Circuito fitness in casa	Tutti i problemi che portano malattie incurabili…faccio il possibile per evitarli…alimentazione e vita sana	La sento e vedo raramente..	Internet	Predisposizione, ereditarietà e stile di vita	No mai	Dolore o aritmia
Paola	41-50	30 - 40 ore (Tempo Parziale - tempo Pieno)	Laurea / Laurea Magistrale	NON fumo	Yoga. Bene	Tumore. Alimentazione sana e stile di vita attento. E poi ovviamente il Covid per il quale siamo blindati in casa	È scrupolosa seria attenta	Internet studi libri esperti	Multifattorialità. Genetica alimentazione stile di vita errato sedentarietà	Sì è seria e competente ma io studio tanto anche da sola (questo e altri argomenti)	Tachicardia extrasistole dolore al petto (dipende)
Elena	31-40	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	Fumo più di 10 sigarette al giorno	Salire quattro piani di scale a piedi. Affanno lieve all'arrivo con fiatone.	Mi fanno paura i problemi derivanti dallo stress psicologico ed emotivo che si ripercuote sulla salute e sullo stato del corpo. Vorrei tenere a fuoco la situazione con supporto psicologico,	Ho di recente deciso di sottoporsi ad una visita di medicina generale finalizzata al check up. Il bravissimo medico che mi ha seguita ha investito gran parte del suo tempo nell'informarmi ed educarmi circa l'importanza della prevenzione e i risultati che si possono ottenere. È stata un'esperienza molto positiva che denota un ruolo del medico evoluto.	Mi rivolgo al medico o a specialisti. Apprezzo anche i servizi di videoconsulto.	Lo stress a cui sottoponiamo il nostro organismo su più fronti: stile di vita, emotività, alimentare, ambientale	Vedi domanda sopra circa esperienza positiva con medico.	Dolore al petto vista offuscata svenimento
Maria	51-60	30 - 40 ore (Tempo Parziale - tempo Pieno)	Laurea / Laurea Magistrale	Fumo tra 5 e 10 sigarette al giorno	Giocando col cane in giardino. Un po' di affanno	Tumori e ictus. Mangiare sano, integratori, meditazione	È bravissimo-Troppa attesa in ambulatorio	Internet prima poi se non sono soddisfatta al medico	Stress, fumo, alimentazione scorretta, alcol	Devo tenere sotto controllo il colesterolo e se smetyessi di fare sarebbe meglio.	Dolore al petto, difficoltà respiratorie.
Lara	31-40	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	NON fumo	Pilates	Tumori e cerco di fare una vita sana... mangiare bene, nn fumare ma nn sono convinta che qs mi preservi...	Pochi rapporti	Medici specializzati	Molti fattori	No	Aritmie, senso di ansia

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Luna	31-40	40 + (Tempo Pieno - Straordinari)	Dottorato	NON fumo	Sport in casa, bene, normalmente pratico Yoga e Crossfit	Soffro di endometriosi e ho patito un ricovero per pneumotoraci recidivanti, preferirei non si ripetessero	Normale	Mi informo in autonomia e mi rivolgo ai medici che mi seguono, da quello di base agli specialisti	Cattiva alimentazione, colesterolo, ereditarietà.	No mai	Alterazioni dei battiti o dolore in area sterno o al braccio sinistro
Giulia	31-40	30 - 40 ore (Tempo Parziale - tempo Pieno)	Laurea / Laurea Magistrale	NON fumo	Andare a fare la spesa con mascherina soffocante, guanti e ansia.	Al momento, i virus mortali... Esco solo se necessario. In generale, problemi che coinvolgano le capacità cerebrali. Alleno il cervello più che posso.	Adoro la mia dottoressa, va oltre i sintomi fisici ed esplora molti altri aspetti della persona per cogliere il cuore del problema. Dedica tutto il tempo necessario ad ogni paziente per parlare e capire. L'unico aspetto negativo è che è praticamente impossibile contattarla telefonicamente.	Mi rivolgo con molta fiducia ai farmacisti.	Cattiva alimentazione, scarsa attività fisica, fumo, eccesso di alcol.	No.	Affaticamento sotto sforzi anche non importanti
Yuliana Perez	31-40	40 + (Tempo Pieno - Straordinari)	Diploma Medie	NON fumo	Fare le scale, affaticata	L'invalidità, non fumo e camino tantissimo.	Nessuno, non ci vado quasi mai	Su internet	L'alimentazione	No	Dolore al petto
Martina	18-30	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	Fumo meno di 5 sigarette al giorno	20 minuti di ginnastica. Stanchissima	Il cancro. Non faccio niente per evitarlo. Evito di fumare troppo	Ho appena cambiato medico perché mi sono trasferita. Non mi piace molto, è freddo e sembra superficiale	Purtroppo internet	Penso siano congenite	No	Fastidio al petto, magari eccessivo fastidio sotto sforzo.
Serafina	41-50	NON lavoro	Diploma Liceo / Istituto tecnico	NON fumo	Mestieri di casa - pulizie primaverili - stanca	Ictus ed infarto - poco o niente	Ottimo - Professionista molto empatica e disponibile	Tendenzialmente al mio medico, raramente qualche ricerca internet	Stili di vita disordinati	No non ne ho mai parlato	Battito debole o accelerato, dolori al petto, affanno
Sara	18-30	NON lavoro	Laurea / Laurea Magistrale	NON fumo	Esercizi fisici, tutto bene	Alimentazione controllata e attività fisica	Medico disponibile ad ascoltare le esigenze dei pazienti	Conoscenti medici/ medico di base	Cattiva alimentazione, assenza di attività fisica e patologie croniche	Non ho parlato di questo argomento	Dolori al torace e sudore freddo
Chiara	41-50	20 - 30 ore (Tempo Parziale)	Laurea / Laurea Magistrale	NON fumo	Camminata. Mi sono sentita bene	Nessuno	Non la vedo mai per fortuna	Amici medici	Genetica	Mai parlato	Affanno
Federica	31-40	40 + (Tempo Pieno - Straordinari)	Laurea / Laurea Magistrale	NON fumo	Aerial yoga. Mi sento sempre bene dopo l'attività fisica non intensa.	Mi fanno paura le possibili complicazioni della mia allergia (pollini, pelo animale). Tengo pulita casa.	La mia dottoressa è molto disponibile. Gli orari non sono molto comodi e compatibili con il mio lavoro.	Mi informo su riviste scientifiche o consulto siti online.	Genetica, cattiva alimentazione, carenza di attività fisica sin dai primi anni di età	No, mai.	Peso al petto/schiena. Difficoltà a respirare. Nausea.
Manuela	51-60	NON lavoro	Diploma Medie	Fumo più di 10 sigarette al giorno	Solitamente palestra ma in questo momento io resto a casa	Coronavirus e cancro	Il mio medico è semplicemente fantastico	Al mio medico	Stress fumo sovrappeso	no	ritenzione affaticamento e aritmie
Maria Anna Caracciolo	70+	Meno di 20 ore per settimana	Diploma Liceo / Istituto tecnico	Fumo più di 10 sigarette al giorno	Moderatamente rilassata nonostante gli eventi ma ho un familiare da seguire, ammalato	Cancro ed infarto. Cammino molto	Quasi burocratico. Troppi pazienti	Mi rivolgo a specialisti	Stress e problemi	Di rivolgermi allo specialista	Fino ad ora non ne ho avuti

Name	Age	Education	Work	Smoking	Medical visits	Caregiving	Physcial Activity	Risks for CVD	Symptoms for CVD	Health Markers and Devices
Alessandra	18-30	Altro	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	No	Camminata +10k passi, sentita bene	Ereditarietà, mancato allenamento, cattiva alimentazione	Non saprei	Visita medica agonistica annuale. Elettrocardiogramma in regola.
Anna	51-60	Altro	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata di 20km. Stanca ma bene	Genetica, stress, alimentazione sbagliata, inattività fisica	Affaticamento fisico, aritmia, dolore al petto, mal di testa	Misurazione pressione (a casa), esami prescritti dal medico di base
Silvana	41-50	Diploma della scuola Media Inferiore	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Altro	Si	Nessuna attività fisica	Fumo,stress,	Non lo so, penso formicolio del braccio, dolore al petto...	Una volta all'anno faccio solo gli esami del sangue e urine. Più di cinque anni fa'ho fatto un elettrocardiogramma. Non ho mai avuto febbre.
Paola	41-50	Diploma della scuola Media Inferiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Non faccio sport	Alimentazione e mente	Le emozioni	Cerco di vivere il più serenamente possibile e di rispettare ogni essere vivente
Cristina	41-50	Diploma della scuola Media Inferiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	Si	Nessuno	Lo stress	La circolazione	No
Rita	41-50	Diploma della scuola Media Inferiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo più di 10 sigarette al giorno	Una volta al mese	Si	Vado in palestra 3volte alla settimana . Stanca ma con meno stress	Vita frenetica e stress	Non saprei	Soffro di ipertensione e misuro la pressione spesso
Francesca	51-60	Diploma della scuola Media Inferiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Camminata veloce..circa 7km mi sono sentita scarica e leggera	L'alta pressione sanguigna e errate abitudini alimentari	Senso di affaticamento e stanchezza	Il mio livello di salute è ottimo. Un ceckup annuale
Marina	51-60	Diploma della scuola Media Inferiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta al mese	No	Camminata sportiva mi sento bene	Obesità e sedentarietà e fumo	Aritmie	Esami del sangue ogni 6 mesi
Luana	51-60	Diploma della scuola Media Inferiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo più di 10 sigarette al giorno	Altro	No	Non faccio attività fisica	Sovrappeso e fumo	Affaticamento	Credo buono
Mauri	51-60	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Corsi in palestra bruciagrassi ,mi sento bene, un po stanca faccio un ora e mezza	Ipertensione	Sedentarietà e cattiva alimentazione	Si
Adele	51-60	Diploma della scuola Media Inferiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Camminata in montagna. Mi sono sentita benissimo	Alimentazione sbagliata, poco movimento, fumo	Tachicardia, ansia	Controlli periodici
Federica	51-60	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Piscina/pilates/stretching alternati	Genetica cibo stress vita sedentaria	Tachicardia	Non buono...... Controlli medici ho la sclerosi multipla retinite pigmentosa ipertensione ed altri disturbi. Mi sono ritrovata ad avere la SM e disturbi cardiaci dovuti ad un forte stress emotivo, oltretutto finché ero in attiva lavorativa non mi sono resa conto i primi disturbi venivano associati alla stanchezza del lavoro e famiglia ho tre figli, ma sono convinta che è stato un accumulo di dispiaceri personali a scatenare le mie problematiche o tanto meno ad peggioramento

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Paola	51-60	Diploma della scuola Media Inferiore	Meno di 20 ore per settimana	Fumo tra 5 e 10 sigarette al giorno	Altro	No	Bicicletta 20 km. Un po' affaticata ma più per il caldo che per l'attività	Alimentazione - sedentarietà	Affanno - dolore al petto	Nella norma. Ogni anno visite ed esami in prevenzione
Chiara	51-60	Diploma della scuola Media Inferiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Purtroppo nessuna	Cibo sbagliato	Batticuore	Abbastanza sana, solo un pó sovrappeso
Maria Rosa	61-70	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta ogni sei mesi	No	camminate sotto il sole. Stanca e accaldata	sedentarietà	sedentarietà	non saprei, se non sento dolori o altro presumo di stare bene. Non uso nulla
Silvana	61-70	Diploma della scuola Media Inferiore	Meno di 20 ore per settimana	Non fumo	Una volta al mese	No	Camminata veloce , dolori muscolari lievi	Peso alimentazione scorretta	Affanno e stsnchezza	IBM esami del sangue
Maria	61-70	Diploma della scuola Media Inferiore	Non lavoro	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Nessuna.	Stress Affaticamento	Mancanza di aria	Sufficiente. Non utilizzo niente
Lauretta	61-70	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Impegnstiva nessuna, nuoto ma con moderazione	DanNi derivati da cattive abitudini alimentari	Boh, forse aritmie? Palpitazioni?	Ascolto i messaggi del corpo e faccio periodicamente analisi del sangue
Angela	61-70	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	camminata .sto bene	bisogna fare i controlli	non so	Faccio esami del sangue annuali
celestina	70+	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	stanca	non so	non so	si
Mirella	70+	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Altro	Si	Andare x boschi a passeggio stanca ma contenta	Eredità .pressione .il fato	Non saprei ..	Ogni tanto misuro la pressione e esami del sangue
alda	70+	Diploma della scuola Media Inferiore	Non lavoro	Fumo tra 5 e 10 sigarette al giorno	Una volta al mese	Si	bene	la trascuratezza della propria salute	la mancanza di fiato	controllo della pressione e controlli periodici in generale
Claudia	70+	Diploma della scuola Media Inferiore	Non lavoro	Non fumo	Una volta all' anno	No	Nessuna	Cibo	Stres	Il medico
rosella	70+	Diploma della scuola Media Inferiore	Non lavoro	Fumo più di 10 sigarette al giorno	Altro	No	Cammino, fiato corto	Genetiche	Colesterolo	Pressione, esami di routine
Giuliano	18-30	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo più di 10 sigarette al giorno	Altro	Si	non svolgo attività fisica	genetica	non ne ho idea	misuro la pressione 1 volta a settimana
Daisy	18-30	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	No	Mi alleno con personal trainer con e senza pesi Affannata	Alimentazione scorretta Fumo Fattori genetici	Pressione alta Colesterolo Sovrappeso	In generale buono Anche se ho diversi problemi faccio spesso esami per tenere sotto controllo
Giulia	18-30	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Lavoro nei campi, stanca	Abitudini sbagliate	Non lo so	Non uso strumenti, certamente non buono
Arianna	18-30	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Più volte al mese	No	Ho camminato qualche chilometro a piedi,stanca perché ho la fibromialgia	Fattori genetici uniti a comportamenti alimentari,al fatto di fumare o bere o meno e a fattori ambientali come smog e allo stress	Dolore alla spalla dx. Mi pareva di aver sentito cosi	Esami del sangue periodici e completi più quelli legati alla prevenzione e qualche valutazione quotidiana come il fatto di essere o meno affaticata nel fare le cose.

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Monia	31-40	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta all' anno	Si	Ho camminato in montagna. Mi sono se tira bene	Sovrappeso, fumo, sedentarietà	Affanno	Una vita sana sia a livello alimentare che di movimento ed esami del sangue annuali
Rosanna	31-40	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Cammino a passo veloce dalle 4 alle 5 volte a settimana per un'ora e cambio spesso tipo di percorso. Nei primi 15/20 minuti sono stanca e leggermente affaticato, dopo mi riprendo e ho le gambe molto più leggere.	Sedentarietà, stress, fumo e sovrappeso	Affanno, stanchezza, vertigini	Sto a un livello intermedio, cerco di muovermi il più possibile e mantenere uno stile di vita sano
Paola	31-40	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	No	Nessunw	Genetica	Non saprei	Facendo controlli periodici
Francesca	31-40	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	Si	Mi piace molto camminare e cerco di farlo tutti i giorni.. alla fine della camminata che di solito faccio dopo il lavoro mi sento stanca ma passa dopo un oretta	Poca attività fisica e una alimentazione sbagliata	Affaticamento nella respirazione e stanchezza continua	Cerco di fare attività fisica e cerco di mangiare sano
Laura	31-40	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	Non ne faccio	Genetica o predisposizione	Non lo so	Discreto
Giuliana	31-40	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Nessuna	Fumo stress	Non so	Discreto
Sara	31-40	Diploma della scuola Media Superiore	Non lavoro	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Gita con bambini con diverse soste 6 ore, sarei andata avanti ancora	Fumo, poco sport , alimentazione	Stanchezza cronica	Analisi del sangue 1 volta all anno
Michela	31-40	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta all' anno	No	Yoga. Felice	Tante e differenti.	Infarti	Finche respiro é ok :)
Greta	31-40	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	non faccio attività fisica	alimentazione scorretta fumo e genetica	dolore braccio dx dolore al petto fatica a respirare senso di	esami misuro la pressione prendo integratori
Alice	31-40	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	Si	Ho portato secchi di macerie dal secondo piano al piano terra. Al momento dello sforzo non ho avuto problemi, il giorno dopo male ai polpacci (ho fatto 3 volte i 2 piani a piedi in discesa e in salita)	Malattie a carico del cuore e del sistema circolatorio	Affaticamento, fiato corto, aritmie, tachicardia	Controllo del peso, alimentazione sana, controllo della pressione sanguigna, analisi del sangue e urine se ho sintomi che mi fanno pensare di avere qualche problema
Paola	31-40	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Passeggiate, gambe leggere e stato psichico rilassato	Cattivo stile di vita (alimentazione, sedentarietà..), predisposizione familiare, diabete, collesterolo, pressione alta,..	Scompenso, pressione alta, affanno, stanchezza cronica, battito cardiaco accelerato, ..	Buona, misuro la pressione abbastanza di frequente
Valeria	31-40	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata con passeggino, mi sn sentita un po' in affanno	Fumo, sedentarietà, cattive abitudini alimentari, genetica	Stanchezza, affanno	Se mi sento poco bene, contatto il mio medico di base o lo specialista

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Maris	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Nulla	Stress e alimentazione	St	Esami ogni tanto
Angela	41-50	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Altro	Si	Camminata in salita percorso dal lago di circa mezz'ora a 1400 mt. Mi sono sentita bene	Alimentazione e genetica	Non saprei	Visite al bisogno e prevenzione
Simona	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Nessuna attività	Fumo alimentazione sedentarietà	Nn so	No
Stefania	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Trekking. Spossata	Pressione, cibo, vita stressata, congenite	Tachicardia, affanno, stanchezza	Spossatezza, malessere. Non uso strumenti
Rosa	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Bicicletta... Bene	Alimentazione vita sedentaria eredita	Infarto	Autovalutazione
Anna	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Camminata in montagna 10 km - felice e stanca	Alimentazione, fumo, stress, predisposizione	Palpitazioni	Ottimo , dono sangue regolarmente
Francesca	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	La salita per arrivare dal mio psicologo. Mi sono sentita morire! Cuore in gola battito cardiaco accelerato che non ritornava.	Trascuratezza del proprio corpo. Cibo fumo sedentarietà forte stress ipertensione	Effettivamente non mi è chiaro a parte indizi tipo colesterolo alto ipertensione...ma reali sintomi cardiaci non li conosco	Analisi del sangue
Michela	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Fumo tra 5 e 10 sigarette al giorno	Una volta ogni sei mesi	Si	Mi sono fatta un trasloco e, come sempre, muovermi e fare attività mi fa stare benissimo	La predisposizione genetica ma anche troppi dispiaceri, dolori ed un mancato ascolto di se stessi e del proprio cuore	Affaticamento, dolori in sede cuore, stomaco, arto sx	Controlli dal cardiologo ma soprattutto l'attenzione su me stessa
Michela	41-50	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta all' anno	Si	Camminata in montagna. Senza fiato	Genetiche	Varie	Visita cardiologo
Ilenia	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Potatura alberi del giardino, al termine ero stanca e sudata ma senza affanno (faccio lunghe camminate di almeno 1 ora a passo svelto tutti i giorni)	Stile di vita sbagliato (fumo, alimentazione, mancanza di movimento) oppure cause genetiche	Affanno, dolore al petto, stanchezza cronica	Credo sia nella media, non sono un'atleta né una sportiva ma cerco di stare attenta a quello che mangio e al movimento
Alessandra	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Skiroll. Bene non troppo stanca	Sovrappeso, ereditarietà,	Non lo so	Buono, nessuno
Patrizia	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	No	Camminata. Stravolta	Stile di vita dannoso, predisposizione genetica	Sbalzi pressori, affaticamento immotivato, dolori	Esami, tenere sotto controllo la pressione. Confronto con gli specialisti
Eva	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Affaticata a causa di aumento peso corporeo dopo menopausa	Fumo, cattiva alimentazione, stress e poca attività fisica	Fiato corto, dolori al petto	Si controllo pressione e glicemia
Roberta	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Corsa mi sono sentita bene	Fumo colesterolo problemi dalla nascita	Pressione alta	Si esami di prevenzione
Laura	41-50	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Camminata veloce. Stanca ma soddisfatta	Cattiva alimentazione e stile di vita sbagliato	Ipertensione?	Esami del sangue e visite specialistiche

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Raffaella	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	Si	Camminata veloce. Mi sono sentita rilassata	Genetica, stile di vita	Stanchezza, affanno	Ascolto molto il mio corpo e cerco di rispettarlo
Paola	41-50	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	No	Jogging....tre volte a settimana....mi sento benissimo	Conduzione di stile di vita erratoasma	Asma ....affannoesami	Analisi sangue semestrali
Debora	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata montagna	Cibo e sedentarietà	Pressione alta	Si macchina per la pressione
Monica	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Bicicletta. Mi sento molto bene	Il cibo e la poca attività fisica	Dolore al petto	Al momento non utilizzo nessun strumento se non mangiare con consapevolezza e muovermi all aria aperta appena possibile
Mirella	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Nordic walking, soddisfatta	Genetica e cattivi stili di vita	Tachicardia, pancia prominente, analisi sballate, ipertensione	Analisi sangue
Maria	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Nessuna	Ereditarietà , sovrappeso, ipertensione	Non so	No
Menia	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata, dopo bisogno di riposo per la pressione bassa	Obesità, colesterolo alto, pressione arteriosa	Affaticamento	Faccio eco ogni 5 anni, in casa misuro i battiti e l ossigeno con l apposito strumento
Sandra	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Altro	Si	Camminata	Stile di vita ereditarietà	Ormoni	Mediocre
Lucia	41-50	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta al mese	No	Lavato vetri e tapparelle... stanca	Cattivo stile di vita	Non so	Misuro la pressione quando non mi sento bene.
Enrica	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	20 km di camminata veloce. (300 km di media mensile) alla fine mi sento soddisfatta e tonica	Stress e vecchiaia	Male al braccio e fiato corto	No
Stefania	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Niente	Sovrappeso fumo anomalie congenite	Affanno e tachicardia	No
Stefania	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Fatto 1h. di corsa leggera e subito dopo lavato pavimenti, vetri. Un po' stanca e affaticata solo al termine di tutto	Troppo stress, fumo, sovrappeso.	Fitte e dolori al petto.	Andando dal mio medico per sapere il mio livello di salute. Per ora nn utilizzo nessuno strumento visto che godo per ora di buona salute...magari un domani...
Milena	41-50	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	No	A parte sport (corsa) 4 volte a settimana non svolgo attività fisiche impegnative. Mi sento vene	Alimentazione errata, mocisteina alta, scarsità di apporti nutrienti fondamentali, obesità, fumo, glicemia alta, mancanza di attività fisica	Lo ignoro	FC a durante attività fisica, omocisteina ai controlli (rari)
Nadia	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Trail 21 km e 1500 mg di dislivello. Alla fine soddisfatta ma stanca!	Il cibo e la sedentarietà	Difficoltà respiratoria, stanchezzanon	Valutando il peso forma e l'energia

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Romina	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	Pratico fitness tutti i giorni con l'uso fi pesi che vanno dai 2 agli 11 kg. Quando faccio attività fisica mi sento bene forte e in salute	La sedentarietà, il cibo industriale che a lungo andare deteriora il fisico, la genetica, l'abuso di fumo e alcool.	Non saprei	Il miglior parametro di misura siamo noi stessi. Appena qualcosa non va il corpo invia delle informazioni al cervello e ci mette in allarme.
Cinzia	41-50	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta al mese	Si	Pulizia. Stanca	Genetiche	Tachicardia	Visite specialistiche
Ida	41-50	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	Si	Sono in vacanza per cui a parte camminate non faccio molto, e mi sento sempre bene	Stili di vita non sempre sani	Cattiva circolazione	Mediamente buono. Non uso strumenti, ma mi sento bene
Antonella	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Nessuna	Ereditarietà e alimentazione	Non lo so	Diagnosi precoce femminile
Silvia	41-50	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Pedalata all'aperto. Stanca ma felice	Familiarità cattive abitudini alimentari/vita, stress	Fiato corto, formicolio a gambe mani, vene, capillari in evidenza.	Molto buono, Esami del sangue, condizione generale di salute non preoccupanti, aspetto fisico sano.
Elena	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Stanca	Predisposizione, sedentarietà, cattive abitudini alimentari e non	Affanno, colorito spento, sovrappeso	Ascolto i segnali del mio corpo e se necessario mi rivolgo al mio medico
Lorena	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta al mese	Si	Pilates e a camminata in montagna. Stanca ma bene	Genetiche e a volte cattiva alimentazione	Non saprei forse stress oppure come sopra	Monitoraggio annuale
Elena	51-60	Diploma della scuola Media Superiore	Meno di 20 ore per settimana	Non fumo	Altro	No	5 piani di scale a piedi tutti i giorni 4 volte al giorno / benissimo	squilibrio e sofferenza emotiva	non ho idea	valuto il mio livello di salute in base a come mi sento / il mio strumento è la consapevolezza del mio stato emotivo/energetico. Alla domanda "quante volte mi reco dal medico" non ho potuto rispondere perchè la risposta è : "solo quando ho una malattia davvero grave. Nello specifico non vedo il medico da 12 anni"
Nicoletta	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	No	Camminata veloce. Rilassata	Cattiva alimentazione, sedentarieta, anomalie congenite	Affanno, debolezza, tachicardia, ritenzione	Mi ascolto
Daniela	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	Si	Lavori in casa. Stanca	Sedentarietà, sovrappeso, fumo, alcool	Affaticamento	Sì. Controlli medici, analisi, prevenzione
Mari	51-60	Diploma della scuola Media Superiore	Meno di 20 ore per settimana	Non fumo	Altro	Si	Ginnastica - benissimo	Prevalentemente ereditarie	Tachicardia - giramenti di testa	Ogni tanto misurazione pressione
Giovanna	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Passeggiata.al termine ero in affanno	Malattie legate al cuore	Dolori al petto e alla schiena	Analisi e visite specialiste
Maria	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	palestre chiuse	ereditarie	dolore al petto, stanchezza, sincope	Livello mediocre e controlli periodici

Name	Age	Education	Work	Smoking	Medical visits	Caregiving	Physcial Activity	Risks for CVD	Symptoms for CVD	Health Markers and Devices
Nicoletta	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Al lavoro diverse ore intense consecutive. Mi sono sentita stanca e stressata	Eccessivo sforzo? Cattiva circolazione	Obesità soprattutto addominale	Oramai mi conosco piuttosto bene, e comunque cerca di fare controlli e prevenzione
Miriam	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Allenamento con personal trainer. Stanca e sudata ma piena di energia	Alimentazione, sedentarietà, ereditarietà	Difficoltà a respirare, oppressione al petto, dolori	Esami periodici
Luisella	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	No	Cross cardio Stanca ma carica	Alimentazione, genetica e inattività fisica	Ansia e stress	Ogni tanto controllo cardiologico
Roberta	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	No	Vado ogni mattina a fare camminata veloce e in questi gg mi sembra più faticoso xkè fa caldo.	Sovrappeso, fumo, diabete, ipertensione, stress correlato sul lavoro ed inattività sportiva.	Nella donna i sintomi attacco di cuore sono sudori freddi, male alla schiena al collo, ansia nausea, sintomi che molte volte vengono confusi con altre patologie. Infatto	Buona. Ogni hanno faccio una serie di controlli. Pacchetto prevenzione.
Stefania	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta al mese	Si	Bene	Alimentazione e sedentarietà	Affanno, pressione alta	Controllo peso, analisi, pressione cardiaca
Nadia	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Yoga e pilates. ottimamente	Stati emotivi alterati (ansia, stress, dolore etccc) nutrizione e idratazione scorretta, assenza di attività fisica adeguata, predisposizione da patologie ereditarie, fumo e alcool , ritmi circadiani alterati.	Tachicardie, patologie riflesse (disturbi all'apparato digerente)	No. Controlli all'abbisogna
Manuela	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Trekking....rilassata..ossigenata..più energica	Stile di vita errato..	Affaticamento..dolori	Oltre a donare sangue nulla
Rosa	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	No	Giro in bicicletta di 20km. Mi sono sentita molto bene	Vita disordinata, alimentazione non sana, stress, fumo, poco movimento, familiarità	Poca attenzione ai sintomi, non c'è prevenzione	Ogni 6 mesi faccio dei controlli in seguito ad un tumore al seno(2017)
Simona	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta all' anno	No	Ashtanga,un tipo di yoga dinamico molto intenso	Alimentazione	Non so	Da come mi sento
Angela	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Altro	Si	Passeggiata	Lo stress	Tachicardia	Le analisi, la pressione
MONICA	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	Camminata veloce xhe va dai 20 minuto all' ora di durata (a seconda del tempo a disposizione). Dopo l'attività mi sento più "carica"	Cattiva alimentazione, alchol e/o tabaccoe anche problemi ereditari e genetici	Giramenti di testa	Bilancia, misuratore di pressione, analisi del sangue
Francesca	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta al mese	Si	Stanca	Tachicardia	Affanno	Discreto
Elena Rita	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta all' anno	Si	Non svolgo nessuna attività ma cammino molto	Fumo stress aumento di peso	Nn lo so	No

Appendix B

Name	Age	Education	Work	Smoking	Medical visits	Caregiving	Physcial Activity	Risks for CVD	Symptoms for CVD	Health Markers and Devices
Ilaria	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Un ora di kinesis Molto bene	Cattivo stile di vita	Stanchezza	Controlli medici periodici
Daniela	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Nessuna	Non saprei	Non so	Mi sento bene, seguo una dieta equilibrata
Francesca	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata in montagna. Affaticata ma rilassata	Stress e alimentazione	Stanchezza cronica	Controllo generale una volta all'anno
Cristina	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta al mese	Si	Nuoto	Genetica	Mancanza di fiato	Misuratore di pressione
Veronics	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Ho camminato a passi svelto mi sono sentita bene	Stress alimentazione predisposizione genetica	Non saprei	Analisi del sangue e controlli di routine mammografia ecc
Simona	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Rimettere a posto e pulire tutta casa per lavori di ristrutturazione. Mi sono sentita stanca dopo	Credo siano malattie dovute per la gran parte dal nostro patrimonio genetico che con lo stile di vita possono essere anticipate o ritardate	Affanno tachicardia	Analisi del sangue misurazione della pressione alimentazione e movimento
Manuela	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata sportiva 15 km: mi sono sentita bene, leggermente affaticata con recupero veloce	Genetica, cattive abitudini, stress	Affanno, tachicardia	Check-up periodici
Irene	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	No	Camminata. Bene.	Alimentazione.	Non lo so.	Esami periodici.
Laura	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Camminata sportiva, stanca ma soddisfatta	Stress, congenite, sedentarietà	Affaticamento, affanno	Per mezzo di Analisi del sangue e controlli annuali. Si
Cristina	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta all' anno	No	Non faccio attività fisica	Stress	Circolazione	Buona, non uso strumenti per farlo
Marina	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata veloce- corsa leggera molto bene	Sedentarietà e cattive abitudini alimentari + fumo ecc.	Non saprei	Con la prevenzione
Maria	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Altro	Si	Spossata	Stress e alimentazione	Colesterolo obesità	Esami del sangue
Simona	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	No	Camminata . Esausta dovuto al caldo	Ereditarietà	Stanchezza?	Prevenzione. Misuratore di pressione
Silvia	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Nessuna attività fisica	Alimentazione	Stanchezza affanno	Medico
Laura	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata veloce al parco, col caldo mi stanca particolarmente	Fumo, cattiva alimentazione, sedentarietà, predisposizione	Non capisco la domanda	Con esami specifici al problema
Ida	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Passeggiata di 3km sotto il sole in salita. Stavo per collassare.	Genetiche, sovrappeso, fume e alcohol	Problemi Pressione	Tener sotto controllo il peso e la pressione
Ida	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Passeggiata di 3km sotto il sole in salita. Stavo per collassare.	Genetiche, sovrappeso, fume e alcohol	Problemi Pressione	Tener sotto controllo il peso e la pressione

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Maria Carmela	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta all' anno	Si	Nessuna attività fisica particolare, eccetto normale faccende quotidiane ,anche se ,nonostante tutto,sto poco tempo seduta	Fumo,alcol, vita sedentaria, cattiva alimentazione, patologie genetiche	Stanchezza, dolori intercostali,	Discreto.
Gloria	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Viaggiato. Stanca	Sovrappeso. Cattiva alimentazione fumo e poca attività fisica sia pregressa che attuale	Stanchezza spossatezza e battiti cardiaci alterati	Mi sento bene - senza strumenti
loredana	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo tra 5 e 10 sigarette al giorno	Una volta ogni sei mesi	No	Camminata in montagna. Mi piace.	Poco movimento, cibo in eccesso, stress	Lo ignoro.	Recandosi dal medico
Barbara	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	No	Molto stanca	Stress	Stanchezza	In realtà non sono in salute...oh un linfoma cutaneo
Paola	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Nessuna attività fisica impegnativa, ma comunque pesantezza toracica e respiro un po' affannoso	Poco movimento, una vita troppo frenetica e un'alimentazione intossicante	Pesantezza toracica, dolore associato, debolezza, tachicardia	Misuro la pressione a casa e mi rivolgo ad uno specialista al bisogno
Marta	51-60	Diploma della scuola Media Superiore	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	Nessuna	Sovrappeso mancanza di movimenti alimentazione errata	Non lo so	No
MONICA	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	Si	PILATES.. Mi sento rnto stanca ma rigenerata	Sedentarietà fumo obesità	Non saprei	Abbastanza buono. Check up annuali con screening
Fabiana	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	No	Cyclette x 10km ogni giorno. Molto bene	Non lo so	Non lo so	Buono visite annuali dal cardiologo
Debora	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata veloce, bene ma con un po' di affanno	Alimentazione ricca di zuccheri, grassi e la mancanza di attività fisica	Affanno, tachicardia	Buono. Esami del sangue, misurazione pressione
Raffaella	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta all' anno	Si	Corsa mi sono sentita bene	Stress ,fumo, alimentazione	Nessuna	Attraverso dei controlli: visita cardiologica, analisi del sangue
Donatella	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Escursione in montagna. Stanca ma rinfrancata	Alimentazione errata, scarsa attività fisica, familiarità, dislipidemis	Dispnea, dolore toracico.... Stanchezza	Esami ematici, controllo della pressione arteriosa e del peso corporeo
Fiorella	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Booty barre rigenerata...	Sono malattie pesanti ke possono cambiare le abitudini di vita	Non saprei	No non utilizzo strumenti....cerco di avere una sana alimentazione...svolgere attività sportiva...e ogni tanto un po' di allegria ke aiuta😄
Claudia	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta all' anno	Si	Cammino 12km almeno quattro volte la settimana. Sto benissimo	Alimentazione scorretta, fumo, pochissima attività fisica aerobica	Non ne ho idea, dovrei provarlo	Esami del sangue, ecg
Raffaella	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Nuoto che svolgo regolarmente. Al termine sto molto bene	Alimentazione, sedentarietà, genetica	Non saprei	Check up
Laura	51-60	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Camminata veloce, stanca ma soddisfatta e poi con più energia.	Alimentazione sbagliata	Battito accelerato	Misura pressione

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Sabrina	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Pulire 11 finestre su e giù con la scala...mi sono sentita bene	Sedentarietà cattiva alimentazione legate anche a fattori genetici	Mal di stomaco alta pressione spossatezza	Visite cardilogo, endocrinologo, ginecologo
Giovanna	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Camminata di 16000 passi. Stanca	Cattiva alimentazione, scarso movimento, conseguenze batteriche, predisposizione	Stanchezza cronica, ritenzione idrica	Mi ascolto, ogni tanto provo la pressione
Marisa	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Cammino in montagna e vado in bici 🚲, mi favorisce il sonno notturno	Sedentarietà cattiva alimentazione familiarità	Cattiva respirazione, dolori al petto	Analisi del sangue, controllo pressione
Ivana	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata di 6 km in un'ora	Cause congenite e cause acquisite con l'età e gli stili di vita (obesità, fumo, alimentazione sbagliata...)	Aritmie, palpitazioni, tachicardia, ipertensione	Analisi del sangue e controlli periodici
Claudia	51-60	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Nessuna	Fumo alimentazione e sedentarietà	Non lo so	Macchina per la pressione
Anna	51-60	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminare, mi sono sentita bene!	Vita sedentaria, fumo, alcool	Non so rispondere	Buono, misuro pressione e battiti.
Marta	61-70	Diploma della scuola Media Superiore	Non lavoro	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Purtroppo sono pigra	Sedentarietà cibo fumo	Affanno stanchezza	Misuro solo la pressione e faccio controlli seno sempre
Grazia	61-70	Diploma della scuola Media Superiore	Non lavoro	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Nessuna attività fisica inpegnativa	Colesterolo pressione alta fumostanchezza	Stanchezza difficoltà respiratorie	No
Anna	61-70	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Nessuna causa ginocchio	Stress alimentazione errata poco movimento comgenite	Credo quelle classiche	Se mangio salutare e contengo stressi sento tranquilla
Anna	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta all' anno	No	Coltivo un orticello, questa settimana ho zappato	Familiarità, predisposizione personale	Affaticamento, dispiaceri.	Non uso nessuno strumento, mi sento generalmente in salute e mi affido alla mia valutazione
Rita	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Stanca	Tiroide ,colesterolo,pressione alta ,stress	Pressione alta	Visite di controllo
Angela	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta al mese	Si	Trekking. Attività che svolgo costantemente. Un po' stanca, ma dopo la doccia benissimo.	Sedentarietà, cattiva alimentazione.	Menopausa	Seguo dieta datami dalla nutrizionista
Silvana	61-70	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Camminare. Bene	Familiarita stile di vita ..alimentazione attivita fosica. Lavoro ..amore da donare e da ricevere	Ormonali familiarita Obesità (scaricare le tensioni sul cibo) malattie metaboliche derivanti da cattiva alimentazione .da poca informazione e da poco desiderio di conoscenza .	Salute non significa solo assenza di patologia.....l aspetto psicologico è importante .malesseri psicologici si ripercuotono sempre sul fisico..e alla lunga generano. malattie. Una corretta alimentazione. Il digiuno e importante per la salute attivita fisica... pulizia della persona e dell'ambiente in cui vive ..stare sereno se possibile..

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Angela	61-70	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Camminata..stanchissima!!!!	L'alimentazione,stress,ecc.ecc. ..	Srtess	Non saprei/no
Katia	61-70	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Escursione in montagna. 700 mt dislivello. fisicamente sollecitata ma avevo una marcata sensazione di benessere	O sono conseguenti a disfunzioni dell'apparato cardiocircolatorio o da abitudini insane (sedentarieta, fumo, alimentazione)	Carenza di energia, stanchezza immotivata, palpitazioni improvvise	Controllo dei valori ematici di base, controllo peso, cardiogramma normale o sotto sforzo all'occorrenza
Antonietta	61-70	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Non faccio attività fisica	Colesterolo pressione alta e predisposiziona	Pressione alta	Analisi del sangue
Marisa	61-70	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Bicicletta e mi sento benissimo	Stress genetica	Tachicardia	Quando ti senti in forza... No nessuno strumento
Sonia	61-70	Diploma della scuola Media Superiore	Meno di 20 ore per settimana	Non fumo	Una volta all' anno	Si	Bicicletta, stanca ma felice	Colesterolo, ipotiroidismo, stress, genetica	Dolore affanno battiti irregolari	Provo pressione. Visita annuale cardiogramma
Morena	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Altro	Si	Nuoto mi sono sentita rigenerata	Stress	Non so	Abbastanza buono
Francesca	61-70	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Ho nuotato e mi sono sentita benissimo fisicamente e psicologicamente	Familiarità, fumo, stress, colesterolo alto e abuso di alcool	Male al petto ma non so esattametne	Esami una o due volte all'anno.
Maria Pia	61-70	Diploma della scuola Media Superiore	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Camminata, mi sono sentita bene	Sovrappeso, poca attività fisica, fumo	Stanchezza, dispnea	Lo valuto in base alle energie che ho. Non uso alcun strumento
anna	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	nuoto e camminata bene	vita sregolata :cibo abitudini e patrimonio genetico	affanno pressione irregolare	controlli adeguati nel caso di sintomi
Gloria	61-70	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Giro in bici . Mi sono sentita bene ma molto accaldata	Sedentarietà , fumo , alimentazione , fattori genetici,	Pressione arteriosa , gonfiore alle gambe , affanno	Analisi , controlli periodici , dentista
Giovanna	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta al mese	No	Una camminata con dislivelli di circa 1 ora. Mi sono sentita stanca ma mi sono ripresa dopo una pausa di circa 2 ore	Genetica, alimentazione non salubre e mancanza di attività fisica	Ipertensione, disturbi del ritmo cardiaco	Faccio esami del sangue e una visita cardiologica con ECG annuale
Lucia	61-70	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Camminata mi sono sentita bene	Stile di vita scorretto, troppo cibo scarso movimento	Aritmie, alta pressione, dolori	Buona
Caterina	61-70	Diploma della scuola Media Superiore	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Camminare. Stanca	Alimentazione, sedentarietà, età, genetica, presessione alta	Mancanza di fiato, stanchezza eccessiva	Discreto. Nessuno strumento
Chiara	61-70	Diploma della scuola Media Superiore	Non lavoro	Fumo tra 5 e 10 sigarette al giorno	Una volta al mese	No	Yoga e piscina Benissimo	Ereditarietà fumo alcool sedentarietà	Ereditarietà stress fumo alcool	Me lo dice il mio medico
Ele	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	No	30 minuti di pilates al giorno poi sto benissimo!	Stile di vita e familiarità	Mancanza di respiro	Autoascolto e visite mediche
FRANCA	61-70	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	CAMMINATA VELOCE , come sempre molto rilassata e molto meglio la mia sciatica.	sedenterieta' , non mangiare sano e ereditarietà.	forte stress ?	mediante dei controlli periodici ,attenzione al cibo piu' semplice possibile e sopratutto ATTIVITA' FISICA

Name	Age	Education	Work	Smoking	Medical visits	Caregiving	Phsycial Activity	Risks for CVD	Symptoms for CVD	Health Markers and Devices
Flavia	70+	Diploma della scuola Media Superiore	Non lavoro	Non fumo	Altro	No	Camminata. Bene	Sovrapeso, fumo, ipertensione, malatie congenite	Aritmie, affanno respiratorio,	Analisi sangue, controllo della pressione, al bisogno visita medica
Sofia	18-30	Dottorato	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	No	Corsa di 5km. Mi sento bene, la svolgo regolarmente.	Stile di vita: scarsa attenzione al cibo e o nulla attività fisica	Dolore al petto, problemi nel respiro	Controllo la pressione arteriosa, il peso corporeo e la circonferenza della vita e ogni 1-2 anni faccio il controllo dal cardiologo.. non conosco altri metodi
Silvia	41-50	Dottorato	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Rigenerata	Genetiche, ma anche epigenetiche	Fibrillazione atriale, tachicardia, respiro corto	Non uso strumenti, se non esami del sangue e controlli generici ogni 2 anni, e valuto il mio stato di salute sul mio livello di benessere.
Emma	41-50	Dottorato	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Mi.alleno.tutti.i giorni 1.30-2.00 ore. Jogging nuoto.spinning a giorni alterni. Mi.sento.benissimo	Obesita sedentarieta ipercolesterolemia fumo alccol stress	Affanno gonfiore agli arti.inferiori	misurazione della lressione sanguigna, analisi.del.sangue ogni.sei mesi chek.up completo 1.volta all'anno
Marina	41-50	Dottorato	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Allenamento di nuoto semi agonistico - mi sono sentita bene	Stile di vita sbagliato o qualche patologia specifica indipendente	Non lo so	Battito cardiaco - pressione -
Sonia	41-50	Dottorato	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Una	Una camminata nel weekend	Non saprei	Bilancia
Maria	41-50	Dottorato	Meno di 20 ore per settimana	Non fumo	Altro	No	Spostamento di masserizie varie per un trasloco. Dolorante e spossata.	Suppongo ci sia una predisposizione genetica, uno stile di vita inadeguato (alimentazione, sedentarietà, fumo), a volte infezioni...	Affaticamento, tachicardia, dolore al torace, edema	Esami clinici periodici. Vado dal medico se non sto bene o noto strani sintomi.
Teresa	51-60	Dottorato	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Corsa. Mi sono sentita soddisfatta	Sovralimentazione	Dolore toracico	Esami sangue
Nico	51-60	Dottorato	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Camminata veloce. Soddisfatta	Stili di vita non sani. Predisposizione familiare	Ipertenzione	Esami clinici una volta all'anno
Sabtona	51-60	Dottorato	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Camminare	Alimentazione, fumo , assenza attività fisica	Affanno, artmie, stanchezza, angina	Mediante controlli periodici, analisi
Silvana	61-70	Dottorato	Non lavoro	Non fumo	Una volta all' anno	No	Danza e coreografie contenta	Stile di vita e predisposizione	Silenziose	Controlli
Angela	61-70	Dottorato	Meno di 20 ore per settimana	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	Si	Cammino sto bene	Ereditarietà fumo stress altro	Più cause	Abbastanza buono
Laura	70+	Dottorato	Non lavoro	Non fumo	Una volta al mese	Si	NESSUNA ATTIVITA' IN PARTICOLARE... SOLO 4 PASSI	FUMO, ALIMENTAZIONE SCORRETTAA E STRESS	Affanno, affaticamento, battiti extrasistolici.	Sì, mi provo la pressione e la saturazione. La mia salute non è un granchè, ma il cuore è sano.
Claudia	18-30	Laurea	Meno di 20 ore per settimana	Non fumo	Una volta al mese	No	Camminata lunga sotto il sole, stanca	Predisposizione genetica, sedentarietà, alimentazione, fumo, alcol, obesità, stati infiammatori	Dolore al petto, reflusso, oppressione, nausea persistente, affaticamento cronico, palpitazioni, dispnea, tachicardia,	Faccio periodicamente emocromo, ECG e colonscopia e urinocoltura

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Simona	18-30	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata. Bene	Fumo. Stress	Palpitazioni.	No
Tulliola	18-30	Laurea	Non lavoro	Non fumo	Una volta all' anno	Si	Portare svariati scatoloni in cantina. Stanchissima ma soddisfatta	Fumo, obesità, genetica	Tachicardia, fiato corto	No
Silvia	18-30	Laurea	Non lavoro	Non fumo	Una volta all' anno	No	Nessuna, sono piuttosto sedentaria	Alimentazione e attività fisica	Affaticamento, tachicardia	Medico
Simona	18-30	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Attività: Palestra, sala pesi. Termine attività:energica	Secondo me le cause della malattie cardiache possono essere, cattiva alimentazione, scarsa attività fisica, stress, fumo, alcool assunzione di sostanze stupefacenti.	Secondo me, Dolori al petto e braccio sinistro, affaticamento, cattiva circolazione, giramenti di testa.	Secondo me. Tenere sotto controllo la pressione, prevenzione e analisi del sangue.
Penelope	18-30	Laurea	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta all' anno	No	Sistemazione e sgombero box. Accaldata al termine dell'attività	Fumo, cattiva alimentazione, vita sedentaria, presenza di casi in famiglia (quest'ultima non è considerabile una causa, ma qualcosa che può influire)	Stanchezza, sensazione di affaticamento, cuore che batte velocemente, dolore al torace, giramento di testa	Esami di controllo annuali (o periodici su indicazione medica), in generale. Poi dipende dalla patologia... se avessi il diabete, proverei la glicemia più volte al giorno! Personalmente non posso né valutare, né misurare il mio livello di salute perché non sono un medico. Quello che posso dire è come mi sento e ascoltare quello che il mio corpo mi dice, riferendolo poi a un dottore.
Maria	31-40	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Faccio crossfit 2 volte la settimana. Mi fa sentire bene perché scarico lo stress e mi diverto.	Obesità, fumo, sedentarietà	dolore al petto e affaticamento anche per piccoli sforzi	Non so come valutarlo, però cerco di mangiare sano e fare sport per rimanere in salute.
Nunzia	31-40	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Camminare su percorsi con scale.. Bene	Alimentazione età fumo sedentarietà	Affaticamento dispnea stanchezza	No. Valutazione clinica.
Claudia	31-40	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Senza fiato	Cattiva alimentazione	Aritmia	Esami del sangue
Elisa	31-40	Laurea	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	No	Nuoto ,mi sono sentita bene	Fumo,obesità	Tachicardia	Esami del sangue
Marianna	31-40	Laurea	Meno di 20 ore per settimana	Non fumo	Una volta ogni sei mesi	Si	Corsa, benissimo	Alimentazione ricca di grassi cattivi, fumo, ansia, mancanza di attività fisica	Dolore, tachicardia, affanno	Ascoltando il mio corpo. Misuro i bpm durante gli allenamenti e controllo periodicamente i valori del sangue ed eseguo esami specialistici

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Camilla	31-40	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Lavorato due notti di seguito, in piedi. Il giorno dopo, ero stanca, le gambe pesanti, dolori agli occhi e mal di testa al risveglio.	Alimentazione errata e comportamenti sociali/umani errati, quando non si tratta di cause genetiche/ereditare	Non penso siano cosi diverse della popolazione maschile, ma potrebbero essere con un quadro leggermente diverso in base all'età...dolore toracico che può avere varie localizzazioni , palpitazioni, respiro difficoltoso,	Facendo controlli periodici e presentandomi dal medico se ho delle manifestazioni cliniche nuove, non presente prima.
Mari	31-40	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	In questo periodo non faccio attività fisica impegnativa	Ereditarie o dovute a stili di vita non salutari	Ipertensione, eccessivo affaticamento	Ultimamente controllo spesso la pressione con lo sfigmomanometro
Domenica	31-40	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Stanca	Genetica, cattive abitudini, fumo	Dolori, astenia, dispnea	Sfigmomanometro, saturimetro, fonendo
Maria Rita	31-40	Laurea	20 - 30 ore (Tempo Parziale)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Leggero affaticamento dopo una corsa	Uno stile di vita scorretto,cattiva alimentazione, fumo di sigarette, pressione arteriosa alta	Tachicardia, bradicardia, affaticamento, pressione arteriosa alta	Facendo analisi di routine e monitorando spesso la pressione arteriosa
Claudia	31-40	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo tra 5 e 10 sigarette al giorno	Altro	No	Pratico taijiquan e qigong. Dopo 2 ore di queste attività mi sono sentita stanca ma al contempo piena di energia	Lo stile di vita	Problemi pressori, tachicardia, vertigini, difficoltà respiratorie	Saltuariamente rilevo parametri (peso, pressione etc) ma mi affido più alla sensazione di benessere personale.
Lu	31-40	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Camminata, stavo bene	Colesterolo, obesità	Obesità	Mediocre, mi affido ai medici
Iolanda	31-40	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta al mese	Si	Non faccio attività fisica	Fumo alcool e nessuna attività fisica	Non lo so	Segnali del corpo
Tiziana	31-40	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Altro	Si	Bene. Leggermente stanca	La scorretta alimentazione e la sedentarietà	Tachicardia , fitte , sudorazione eccessiva	Non utilizzo strumenti ma mangio sano faccio esercizio almeno 1-2 volte a settimana e mi sento sempre piena di energie . Sono iperattiva. Però cerco di non esagerare col caffè penso che possa arrecare danno
Cristina	31-40	Laurea	40 + (Tempo Pieno - Straordinari)	Fumo più di 10 sigarette al giorno	Una volta al mese	Si	Acquagym . A fine attività bene, inizialmente molto affaticata	Una condizione di vita sbagliata	Tachicardia , affaticamento	No

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Alessandra	31-40	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Corsa, affaticata	Stile di vita, fumo, sedentarietà, alimentazione, stress, abuso di farmaci o sostanze	Affaticamento dopo uno sforzo minore, Tachicardia, aritmie percepite,	Cerco di fare attività fisica, di mangiare bene per quanto mi è possibile, di non stressarmi, e ho il mio Apple Watch che mi tiene controllata la frequenza cardiaca e mi ricorda di muovermi di più se un giorno sono più demotivata. Non ho niente che possa valutare o misurare il mio stato di salute. Faccio quello che ritengo giusto e incrocio le dita affinché tutto vada sempre bene! (Con controlli periodici dal medico)
Beatrice	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Trekking. Stanca ma molto rilassata	Sedentarietà, alimentazione sbilanciata o familiarità	Affanno, dolore alla schiena e al petto	Esami clinici e controlli sistematici
Silvia	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Nessuna	Sedentarietà fumo alimentazione errata	Palpitazioni respiro affannoso	Visite esami del sangue
Simona	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	Si	Fitwalking 13 km / carico cardio e muscolare medio	Fumo/ vita sedentaria / cattiva alimentazione / stress	Fumo / stress	Viste medico sportive agonistiche annuali
Silvia	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Fumo tra 5 e 10 sigarette al giorno	Una volta all' anno	No	Tapis roulant. Accaldata, indolenzita, stanca	Obesità, sedentarietà, ipertensione, fumo	Affanno, tachicardia, stordimento, svenimenti,	Analisi periodiche. Misuratore di pressione
Alessia	41-50	Laurea	20 - 30 ore (Tempo Parziale)	Fumo più di 10 sigarette al giorno	Altro	No	Ho fatto HIIT, quindi attività intensa a intervalli, alla fine ero stanca ma soddisfatta	Fumo, cibi grassi, obesità, inquinamento, stress	Stanchezza cronica, affanno	In base a come mi sento se energica o meno e non utilizzo nessuno strumento
Nelly	41-50	Laurea	Non lavoro	Non fumo	Altro	Si	Qi gong , yoga, workout. Mi sento benissimo	Stile di vita sbagliato e la genetica	Poss essere diversi I sintomi a volte anche silenti	Faccio dei controlli
Anna	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Corsa. Benissimo	Ereditarietà - stile di vita errato	Pressione alta, aritmia, fribillaziine, ecc	Analisi sangue, misurazione pressione, monitoraggio frequenza durante attivita fisica.
Chiara	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Coltivazione orto mi, sono sentita affaticata	Genetiche più ambientali	Tachicardia affaticamento dolore toracico	Analisi elettrocardiogramma visite
Giovanna	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Ogni mattina faccio dei workout piuttosto impegnativi. Finita l'attività mi sento rilassata, contenta e soddisfatta del lavoro che ho fatto	Cattiva alimentazione e abitudini scorrette. Poco movimento....	Non lo so	No, ma cerco di stare attenta e di prendermi cura. Inoltre cerco di avere uno stile di vita salutare
Valentina	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Pulizie intensive in casa. Spossata	Genetica	Non so	Analisi del sangue e accertamenti vari

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Anna	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	camminata veloce, bene	obesità, sedentarietà, fumo, inquinamento, genetica, cattiva alimentazione	difficoltà respiratorie, aritmie, sincopi	esami strumentali:'ecc, misurazione della pressione e esami del.sangue
Alessandra	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Non posso svolgere attività fisica perché ho problemi di dispnea	Familiari, alimentari, sociali (anche fumo di sigaretta)	Dipende dalla malattia cardiaca. Credo che i principali siano il malessere, dispnea, dolore toracico (o in altre sedi se parliamo di infarto), sudorazioni, dolori gastrici, palpitazioni (aritmie, tachicardie, anche cardiopalmo...) difficoltà al sonno notturno, gonfiori alle	Per ora alimentazione, quando sto meglio (diminuisco le dosi di cortisone) corro una volta ogni secondo giorno per mezz'ora, cammino e le vacanze le faccio in montagna per camminare e respirare aria buona. Cerco di fare una vita tranquilla con poco stress
Roberta	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	No	Corsa. Al termine rilassata	Cattive abitudini soprattutto alimentari	Spossatezza, pressione alta	Conoscendomi, ascolto semplicemente il mio corpo
Sara	41-50	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Faccio TRX almeno due volte la settimana. Alla fine mi sento stanca ma percepisco di diventare più forte e non soffro più di mal di schiena	In generale, una patologia che a qualche livello coinvolge il cuore	Stanchezza, affaticabilita', palpitazioni, ristagno venoso	Godo di buona salute, e periodicamente mi sottopongo ai controlli di routine
Debor	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	No	Pulizie a fondo. Poi ero stremata	Stress familiarità	Edema dolore	No
Rebecca	41-50	Laurea	Non lavoro	Non fumo	Una volta all' anno	Si	Corro almeno 3 volte la settimana per 1 ora. Mi sento energica.	Alimentazione, vita sedentaria, genetica	Affanno se si fanno sforzi	Dono sangue e plasma (quindi costanti esami del sangue), prove da sforzo annuali, ecocardiogramma ogni 2 anni
chiara	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	ho sbancalato dei bancali di materiali e al termine ero un pò stanchina	ereditarietà, stili di vita	affaticamento, difficoltà di respirazione	visite specialistiche
Adele	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	No	Box, mi sento in piena forma	Stress, fumo, vita sedentaria	Dolore alla spalla	Ottimo (anche se tre anni fa mi e' stato diagnosticato precocemente un tumore al seno)
Monia	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo tra 5 e 10 sigarette al giorno	Una volta all' anno	Si	3 gg a settimana 20 minuti di cammino veloce	Obesità, cattiva alimentazione, predisposizione genetica,	Non so	Lo stato di benessere/malessere in generale. Ogni anno un esame ematico completo di costrollo.
Elena	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Fitness training regolarmente mi sento bene	Assenza di stile di vita sano	Disturbi fisici	Impedenziometria 2 volte l'anno esami clinici di routine 1 volta l'anno
Paola	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Nessuna	Alimentazione e malattie congenite	Non lo so	Analisi del sangue, ascolto

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Milena	41-50	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Ho fatto una camminata di 20 km. In salita avevo poco fiato e un leggero indolenzimento generale alle gambe	Ereditarietà, obesità, fumo	Non lo so	Esami del sangue, visite specialistiche
Assunta	41-50	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	Bici da camera. Stanca.	Alimentazione e poca attività fisica	Pressione arteriosa alta, aritmia	Buono. Esami del sangue e esami specifici.
Annalisa	41-50	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Nuoto,molto rilassata	Sovrappeso,cibo spazzatura,sedentarietà,predis posizione genetica	Non saprei	Check up,esami del sangue completi
Cristina	41-50	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Nessuna attività	Sovrappeso fumo poco sport	Alterazione battito mal di testa	Esami del sangue , ecografia addome , Pap test , marcatori
Alessandra	41-50	Laurea	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Corsa	Sedentarieta' e cattiva alimentazione	Affanno dolori al braccio	Non so
Enza	41-50	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Esercizi corpo libero in palestra, dopo I attività mi sento libeave rilassata	L alimentazione errata è in assoluto la causa di quasi tutte le patologie	Non saprei	Da 1 a 10, do 9
Mara	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	No	Corsa collinare di 10 km. Al termine dell'attività, come sempre, mi sono sentita molto bene	La vita sedentaria, la cattiva alimentazione, l'abuso di alcool e/o fumo, cause congenite	Aritmie, stanchezza, gonfiore	Valuto il mio livello di salute attraverso l'attività fisica che riesco ancora a fare senza alcun problema e/o dolore. Ogni 2o3 anni analisi del sangue varie. Pap test, mammografia e altri esami di routine inseriti nei progetti regionali di prevenzione
Anna	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Non ho svolto attività fisiche impegnative questa settimana	Sovrappeso, fumo e stress	Affanno	Cerco di fare visite periodiche e tenermi attiva
Laura	51-60	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	No	Cammino - Molto bene	Fumo stres inquinamento	Non saprei	Prevenzione
Sabrina	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta al mese	Si	Camminata veloce. Stanca ma appagata	Pressione alta , una delle più frequenti	Pressione ,tachicardia , extrasistole	Non saprei
Roberta	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Trekking in montagna. Affaticata dalla salita, ma molto contenta di averlo fatto	Alimentazione scorretta, stile di vita, predisposizione genetica	Non so	Faccio una volta all'anno circa degli esami del sangue e visita di controllo ginecologica. All'occorrenza visite slecialistiche
Ada	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Più volte al mese	No	Nuoto. Mi sono sentita bene.	Familiarità; stress; errate abitudini alimentari; poco movimento; invecchiamento; malattie correlate	Dolore al petto; tachicardia;	Misuratore della pressione sanguigna
Daniela	51-60	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	25 km di camminata veloce su sentiero con 1230 di dislivello positivo. Mi sono sentita soddisfatta, rilassata e stanca il giusto.	Obesità, colesterolo alto, problemi di diabete, ereditarietà, sedentarismo, eccesso di fumo, stress.	Ipertensione, tachicardia, valori pressori alti, aritmie.	Tengo sotto controllo le mie pulsazioni, ecografia annuale a tutti gli organi, visita medico sportiva annuale, analisi del sangue annuali.

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Loredana	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Ho fatto un paio di lunghissime passeggiate, non mi piace fare attività fisica troppo faticosa, alla fine mi sono sentita molto bene e rilassata, insomma mi ha fatto bene al corpo e all' anima	Il cibo e la vita sedentaria	Difficoltà a respirare, oppressione al petto, vomito	Il livello è buono perché non ho sintomi, faccio analisi del sangue e qualche approfondimento diagnostico all' occorrenza
Anna	51-60	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	No	Stanca , spossata.	Stress, sedentarietà , frustrazione ,cattiva alimentazione.	Ipertensione, gonfiore , obesità.	Esami del sangue, visite periodiche , controllo della pressione arteriosa.
Claudia	51-60	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	Si	Camminare, bene	Stile di vita, alimentazione, genetica	Spossatezza	Check un periodici
Sofia	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo tra 5 e 10 sigarette al giorno	Altro	No	Nuoto 2 volte a settimana e 2 volte a settimana acquagym	Sicuramente le sigarette e il cibo	Non lo so	Sono attentissima sul cibo e faccio sport ma mi concedo 5 /6 sigarette al giorno (lo so , non si può)
Anna	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta al mese	Si	Passeggiata veloce. Leggermente affaticata	Ipercolesterolemia, sovrappeso, sedentarietà, diabete, ipertensione, stress prolungato	Affaticamento, dolore toracico,	Controlli ecografici, check up annuale. Si
Gabriela	51-60	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Camminata veloce in salita. Bene	Scorretta nutrizione. Sedentarietà	Sovrappeso	Buono. Normali esami ogni tanto
Caterina	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata 9 km dislivello 200metri salita	Genetica. Alimentazione, scarsa attività fisica	X attacco cardiaco sono diverse da quelle popolazione maschile	Attenzione a come sto. Monitoraggio pressione e battito. Controllo peso
Anna	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata. Stanca ma energizzata	Sovrappeso, problemi circolatori, mancanza di esercizio fisico	Affaticamento	Ascoltando i segnali del corpo, consultando medico, esami del sangue, livello acidità/basicità del corpo. Test urina con cartine
Valentina	51-60	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	Si	Bicicleta.bene.	Soprapezo	Lo stress	Movimento,mangiare giusto e sano.
Antonella	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	No	Ginnastica e bicicletta. Attiva	Scarsa attività fisica, cattiva alimentazione	mancanza fiato, aritmie	Mi reco regolarmente dal cardiologo
monica	51-60	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	camminata veloce al parco. rigenerata	non lo so	non lo so	check up annuale
Patrizia	51-60	Laurea	Meno di 20 ore per settimana	Non fumo	Altro	Si	40 km in bicicletta, molto bene	Obesità, mancanza di attività fisica, congenite	Tachicardia	Resistenza fisica, peso corporeo, stato di unghie e capelli, digestione corretta, evacuazione regolare, assenza di sintomatologia particolari

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Lisa	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Workout con pesi 4 volte a settimana mi sento benissimo	Mancanza di informazione seria e prevenzione	Spesso sono asintomatiche ma ci sono fattori indiretti come peso assenza di esercizio fisico e fumo che indicano una certa predisposizione	Faccio dei controlli specifici
Valeria	51-60	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Camminata. Stanca	Molteplici, tra cui obesità, alcool, fumo.	Tosse, stanchezza, palpitazioni, male al braccio	Non so valutarlo se non a sensazione e non sono a conoscenza di strumenti di misurazione in tal senso.
Silvia	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Attività in palestra, spossata ma contenta	Cattive abitudini di vita	Aritmie, pressione sanguigna anormale	Poter fare attività fisica intensa con moderata fatica
Rossella	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	salito su una collina, al termine ero accaldata .a nulla di più	cattiva circolazione	affaticamento, pressione alta, colesterolo	ogni tanto misuro pressione
Maura	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Bicicletta	Sedentarietà, cattive abitudini, genetica	Affanno, dolori, palpitazioni	Controllo periodici
Lorena	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Stanca ma appagata	Alimentazione errata ipertensione diabete ereditarietà	Tachicardia Ipertensione	Ascoltare e il corpo, fare controlli Annuali pressione esami ematici
Maria	51-60	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	Camminata in montagna. Bene.	Familiarità, sedentarietà, alimentazione	Aritmia palpitazioni	Attraverso screening annuali
Francesca	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Una camminata veloce al termine della quale mi sentivo stanca	Fumo cibo sedentarietà predisposizione genetica	Presumo affanno	Mi sottopongo a controlli regolari e seguo una alimentazione corretta
Maria	51-60	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	No	Camminata. Bene.	Stress/dispiaceri e cattiva alimentazione. Familiarità	Batticuore. Senso di spossatezza. Affanno	Non saprei
Diana	51-60	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	No	Corsa 45' Stanca ma felice	Alimentazione, fumo, sedentarietà	Dolore al petto	Resistenza alle malattie Esami del sangue, screening
Barbara	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Non svolgo attività fisica	Vita disordinata, sovrappeso, predisposizione genetica, stress	Vita disordinata, sovrappeso, predisposizione genetica, stress	no
Anna	51-60	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Faccio tutti i giorni un ora di aerobica e pesetti e mezz'ora di yoga. Al termine dell'attività sto benissimo.	Genetica e non corretto stile di vita	Forte stanchezza fisica, pressione alta	Faccio controlli di routine e tengo monitorata la pressione
Sabrina R	51-60	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Bicicletta piacevolmente affaticata	Virali batteriche fattori di rischio quali il fumo e stili di vita errati quali sedentarietà e obesità	Aritmia	Rilievo PAO, frequenza cardiaca, peso, valutare tempo dedicato ad attività motoria patologie croniche presentate quali ipertensione e diabete
Aurelia	61-70	Laurea	Non lavoro	Non fumo	Una volta ogni sei mesi	No	Trekkkng. Mi sono sentita molto benr	Ansia, stress, alimentazione sbagliata, età, menopausa, climaterio	Affanno, tachicardia, stanchezza eccessiva	Analisi cliniche periodiche, misura della pressione, ECG a riposo e da sforzo annuale, ecografie, mammografia

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Dea	61-70	Laurea	Non lavoro	Non fumo	Una volta ogni sei mesi	Si	Lavori di casa pesanti. Al termine ero stanca e spossata	Vita sregolata	Tachicardia	Mi controllo con degli esami 1 volta l'anno
Norina	61-70	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Acquagym, Idrobile mi sono sentita bene	Cattiva alimentazione fumo vita sedentaria	Lo stress	Lo sfignomanometro,
Ross	61-70	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Camminata Nordic Wolking	Stress alimentazione	Non so	Analisi e evografie
Lilly	61-70	Laurea	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Camminare per 12 km. Alla fine stanca	Sedentarietá, cattiva alimentazione	Fatica nello svolgere normali attivitá	Devo darli. Esami clinici
Diana	61-70	Laurea	40 + (Tempo Pieno - Straordinari)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	Si	bicicletta 50 km benissimo	Genetica, stress e fumo	Fatica nei movimenti	Ascoltando il corpo
Maura	61-70	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	Si	Camminata al Parco Mi sono sentita bene, come sempre	Predisposizione familiare, fumo, alimentazione non corretta, poco movimento, stress...	Respirazione faticosa, dolore al petto, senso di pesantezza, irritabilità	Stress limitato, buon sonno, misurazione pressione, analisi sangue, controlli cardiologo, ginecologo...
Eli	61-70	Laurea	20 - 30 ore (Tempo Parziale)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	No	Passeggiata di circa 4 km. Benissimo	Cattiva alimentazione e scarso moto	Peso ecc.	Autosservazione - esami preventivi tipo mammografia
Camilla	61-70	Laurea	Non lavoro	Non fumo	Una volta all' anno	No	Acquagyn molto bene	Obesità stile di vita	Lo stile di vita	Esami ogni anno
Sandra	61-70	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta all' anno	Si	Camminata, molto bene	Ipertensione arteriosa, diabete, obesità, fumo	Non so	Analisi ematiche ecg
Venere Suma	61-70	Laurea	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	Si	2 lezioni di pilates , bene	Ereditarie	Stanchezza fiatone	sono sotto osservazione ogni 6 mesi in istituto oncologia
Luisella	61-70	Laurea	Non lavoro	Non fumo	Altro	No	Camminata a passo sostenuto	Fumo e cattiva alimentazione	Affanno e palpitazioni	Visite specialistiche ed esami del sangue annuali
Ornella	70+	Laurea	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Ginnastica posturale, alla fine molto bene	Stress, pressione, colesterolo	Tachicardia, affaticamento	Buona per la mia età. Non utilizzo strumenti se non il peso e il girovita
Chiara	18-30	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Nessuna	Stile di vita, genetica	Non so	No
Ludovica	18-30	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	No	59 minuti di training cardio, mi sento stanca fisicamente ma bene	Malattia legate a disfunzioni del cuore	Artmia cardiaca, affaticamento eccessivo al minimo sforzo	Livello di salute buono. Faccio con cadenza annuale delle visite di controllo
Paola	31-40	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Non facendo attività fisica, solo fare un po' di volontariato in un giardino é stato già significativo. Mi sono sentita bene e con qualche minimo dolore muscolare il giorno dopo.	Dieta; predisposizione genetica	Non saprei	Esami quando consigliati dal medico base.
Teresa	31-40	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Non svolgo attività fisica	Malattie ereditarie o della sedentarietà e della vita di eccessi	Cattiva circolazione o affanno	Peso, analisi del sangue
Paola	31-40	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Lezione di crossfit: fisicamente stanca ma stavo bene	Predisposizione genetica, alimentazione sbagliata, fumo e alcool	Fiato corto, stanchezza, dolore	Analisi del sangue periodici per malattie autoimmuni pregresse

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Stefania	31-40	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	No	Nessuna	Patologie metaboliche, stile di vita, eredità	Ipertensione	Misurazione pressione, controllo peso, esami del sangue
Laura	31-40	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Gita in montagna, gambe un po' affaticate	Ipertensione obesità fumo stress	Affaticamento angina	Non saprei
Simona	31-40	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Sono andata in bici per circa un'ora e dopo mi sentivo bene.	Cattiva alimentazione. Assunzione costante di cibi grassi e poca attività' fisica (sedentarietà).	Non so quali siano le sintomatologie di un problema cardiaco nella popolazione femminile.	Il mio livello di salute generale credo sia buono. Non ho dolori e faccio attività fisica regolare.
Alessandra	31-40	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Nessuna in particolare	Obesità e sedentarietà, oltre a predisposizione genetica	Non saprei	No
Delia	31-40	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Per lavoro ho scaricato dalla macchina una decina di pacchi contenenti libri (peso indicativo tra i 10 e i 15 kg l'uno). Non ho avuto particolari problemi, stavo bene solo un po' accaldata per la temperatura esterna.	Alimentazione, fumo, sedentarietà, vita sregolata, ore di sonno	Affaticamento eccessivo, malessere generale, apatia, emicrania	L'osservazione e l'ascolto del mio corpo
Francesca	31-40	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Fumo più di 10 sigarette al giorno	Una volta ogni sei mesi	No	Corsa. Molto bene	Predisposizione genetica Fattori ambientali (inquinamento o fattori esterni non controllabili) Stile di vita inappropriato Cattiva alimentazione Assenza di attività fisica Sedentarietà Abuso di farmaci	Affaticamento Dolore toracico Spossatezza Variazione pressione sanguigna Respiro affannoso Sincope	Attraverso controlli periodici di: esami del sangue Ecg
Sonia	31-40	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Fumo tra 5 e 10 sigarette al giorno	Una volta ogni sei mesi	Si	Arrampicata. Mi sono sentita a pezzi	Predisposizione e cattive abitudini (fumo alcol)	Predisposizione stress	No
Ilaria	31-40	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Altro	Si	Cardio circa 6 km. Rilassata con miglioramento dell'umore	Una serie di patologie tra le principali cause di morbosità, invalidità e mortalità in Italia	Respiro affannoso, affaticamento, alterazione del battito cardiaco ecc..	Buone abitudini e tavola, mantenimento del peso ideale, composizione corporea ideale, stile di vita sano
anna	31-40	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	qst settimana non ho svolto attività fisica	molte malattie sono congenite, altre dovute all'obesità e alla cattiva alimentazione	spesso è asintomatico	in una scala da 1 a 10: 8
Anna	41-50	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	40 vasche in piscina 25m. Mi sono sentita rilassata e tonica.	Fattori genetici e congeniti, stress, fumo, ansia, sedentarietà, cattiva forma fisica.	Affaticamento	no
Chiara	41-50	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Nessuna purtroppo	Dieta, stress e sedentarieta	Stanchezza, affanno, battuto irregoalre	Mancanza di fiato, dolori articolari sono segnali di un livello non alto
Tiziana	41-50	Laurea Magistrale	Meno di 20 ore per settimana	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Palestra	Disfunzioni	Fibrillazione	Controlli clinici. No

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Saby	41-50	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	Si	Bicicletta- rilassata	Alimentazione e scarso movimento	Dolori al petto	Check up
Federica	41-50	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo meno di 5 sigarette al giorno	Una volta ogni sei mesi	Si	Running, soddisfatta ma per la prima mezz ora dopo sono affaticata	Genetica, stile di vita (fumo, alcool, alimentazione, inattività)	Affaticamento, difficoltà respiratorie, problemi circolatori	Analisi de sangue, ecografie, peso
Viviana	41-50	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Camminata - stanca	Fumo sovrappeso predisposizione genetica	Non so	No
Daniela Rosa Primerano	41-50	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Altro	Si	Una lunga camminata, al termine mi sono sentita bene.	Cause prevalentemente genetiche	Dolore al petto	Faccio controlli periodici
Paola	41-50	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Correre. Molto stanca per via del caldo	Obesitá, stress e pressione arteriosa alta per me sono le principali cause.	Credo la pressione alta.	Faccio dei check up annuali (controllo ginecologico, edami sangue, visite varie) controllo la pressione e cerco di condurre una vita il più possibile sana
Silvis	41-50	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta al mese	Si	Ballo e dopo 1 avevo il fiatone	Cattiva alimentazione e stress	Non lo so	Medico di base
Palma	41-50	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Fumo tra 5 e 10 sigarette al giorno	Una volta ogni sei mesi	Si	Nessuna	Cattive abitudini	Dolore al petto, affaticamento	Con controlli periodici
Teresa	41-50	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Altro	Si	Frequento la palestra tre volte alla settimana e faccio body Building. Mi sento bene, dopo ogni allenamento.	Vita sregolata, problemi genetici.	Pressione arteriosa troppo alta.	Faccio analisi del sangue ogni anno ed esami diagnostici.
Deborah	41-50	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Affaticata ma con una sensazione di benessere	Possono essere Congenite ma anche dettate dal proprio stile di vita.	Affaticamento, problemi di circolazione.	Buono. Faccio dei controlli di routine in base alla mia età.
.	41-50	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Nessuna attività fisica	Stress, alimentazione, ritmi elevati	Non saprei	No
Roby	41-50	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	No	Pilates. Bene	Trascuratezza	Aritmie, astenia, dolori	Sintomatologia. Controlli periodici
M.	41-50	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	No	Non svolgo attività impegnative per non arrivare alla stanchezza estrema	Alimentazione, conformazione, dna	Fibrillazioni	Buono. Nessuno strumento.
Michela	41-50	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta al mese	No	Bicicletta. Bene	Sedentarietà e alimentazione errata	Non saprei	Analisi
Maria	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Più volte al mese	Si	Nuoto e sono stata divinamente	Cibo non sano	Come quello maschile	Si
Catia	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Camminata l	Lo stress	Tachicardia	No

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Cristina	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Ho trasportato materiale piuttosto pesante per me, per diversi chilometri. Capita spesso. In genere, dopo, avverto dolori alla schiena.	Pessime abitudini alimentari, sedentarietà e fumo.	Dispnea, pressione alta	Analisi del sangue approfondite una volta all'anno, dieta mima digiuno almeno 3 volte all'anno, misurazione quotidiana della pressione, visite specialistiche.
Marta	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta all' anno	Si	Corsa. Molto bene, scaricata l'ansia	Cattiva alimentazione	Poco sport alimentazione scorretta fumo	Esami del sangue mie sensazioni
Mariella	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Lunghe camminate veloci (9/10 km). Mi sento stanca ma rilassata.	Genetiche, funzionali	Affaticamento, aritmie ecc	App samsung del telefono e orologio fit durante l'attività fisica. Ma spesso temo non siano attendibili
Lucia	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	No	Pratico ashtanga yoga tutti i giorni. Alla fine delle due ore di attività sto benissimo	Alimentazione, stress	Non lo so	Monitoraggio
Anna	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	Si	Sono in vacanza in montagna, sto facendo camminate tutti i giorni con alcuni tratti più impegnativi, normali dolori muscolari ma mi sento più energica e senza fiatone.	Colesterolo, pressione alta, fumo e sedentarietà	Obesità	Analisi del sangue, pressione e una visita cardiologica completa
Ave	51-60	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Una volta all' anno	No	Ciclismo - in forma	Stile di vita non sano	Tachicardia	Controlli
Paola	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Fumo tra 5 e 10 sigarette al giorno	Una volta all' anno	Si	Nuoto	Forse cattive abitudini alimentari e mancanza allenamento fisico oltre a quelle congenite	Stanchezza	No
Antonella	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta all' anno	Si	Lunga camminata a passo sostenuto per ca km 13. Al termine una normale stanchezza.	Disturbi apparato cardio circolatorio dovuti a cause genetiche o ad errati stili di vita.	Gonfiore arti inferiori, affanno e stanchezza	Buono. Screening annuale elettrocardiogramma normale, sotto sforzo e visita cardiologica.
Raffaella	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Salire le scale leggerò affanno	Colesterolo ipertensione	Non so	Si
Giulia	51-60	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	No	Nordic walking... Al termine molto energica e soddisfatta	Stile di vita, alimentazione sbagliata ed eccessiva, fumo	Stanchezza poca energia fiato corto	Dai controlli periodici, dalla prevenzione e da come mi sento
Paola	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta al mese	Si	Niente di impegnativo, cammino 3 o 4 km. al giorno	Genetiche e stili di vita dipende dalla patologia	Dipende dalla patologia	Sono molto attenta ai cambiamenti e ai sintomi
Cinzia	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	Palestra , ... bene sono allenata	Cattiva alimentazione e scarso movimento	Sbalzi di pressione	Valuto la mia salute da come rispondo fisicamente alla vita quotidiana .

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r	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	lavoro in esterno, misurazioni da effettuarsi in campagna, occorre sollevare e spostare attrezzatura pesante, muscoli doloranti, stancante	assenza di autoprevenzione occorrerebbe fare più controlli, eccesso di stress causa ritmi troppo elevati (non solo lavorativi), sovrappeso, alimentazione non corretta (eccesso di grassi)	tachicardie, palpitazioni, aritmie	fare attenzione alle risposte del corpo, se necessario recarsi dal medico, check up periodici (sempre contro il volere del mio medico............rischio di costare troppo allo stato suppongo..........ma costa di più prevenire o curare?)
Claudia	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Una volta ogni sei mesi	No	Escursione di trekking in montagna. Alla fine mi sentivo benissimo.	A parte una piccola percentuale di malattie genetiche, per la maggior parte sono dovute a stili di vita scorretti: fumo, sovrappeso, attività fisica nulla, alimentazione ricca di grassi saturi e zuccheri, stress.	Ipertensione, senso di affaticamento, debolezza	Analisi del sangue, controllo del peso, misurazione della pressione, elettrocardiogramma
Alessandra	51-60	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta all' anno	Si	Ho nuotato per circa 1 km. Al termine ho avvertito una leggera stanchezza.	Sedentarietà, cattiva alimentazione, fumo, uso di alcolici, ma anche fattori ereditari.	Tachicardia e senso di affaticamento	Buono. Mi sottopongo ad analisi periodiche.
Giulia	51-60	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Non fumo	Altro	Si	Nessuna	Malattie degenerative	Fumo	No

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Laura	51-60	Laurea Magistrale	20 - 30 ore (Tempo Parziale)	Non fumo	Una volta ogni sei mesi	No	Non ho svolto nessuna attività fisica impegnativa	Non saprei	Non saprei	Ho una malattia rara autoimmune (dermatomiosite) ; dopo anni di invalidità (non nel senso di aiuto monetario - che non ho avuto - ma nel senso che dal 2011 in poi per anni non sono stata in grado di compiere le attività più elementari - come camminare) sono migliorata da quando non sono più andata dai medici! Non voglio fare controinformazione ma a me è successo proprio così! Ho studiato (io!) la mia malattia e le reazioni del mio corpo, e adesso valuto l'andamento della mia malattia senza fare analisi e senza andare da medici (tranne che per le ricette basic = deltacortene e azatioprina) semplicemente con l'istinto e l'ascolto del mio corpo;
Cristina	51-60	Laurea Magistrale	Non lavoro	Non fumo	Una volta ogni sei mesi	No	Camminata in montagna Stanca ma più leggera	Alimentazione errata Poca attività fisica	Stanchezza Palpitazioni Pressione alta	Visita specialistica No
Antonella	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	No	Yoga - rilassata	Stress, cattiva alimentazione, fumo	Stanchezza, affanno, dolore toracico	Esami periodici
Rosaria	51-60	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Altro	Si	Pulito casa con vaporella...stamchissima	Scorretto stile di vita.Cause genetiche eambientali	Affanno, stanchezza, dolore toracico p9	Dovrei fare controlli periodici...se fossi coraggiosa
Elisabetta	51-60	Laurea Magistrale	40 + (Tempo Pieno - Straordinari)	Non fumo	Una volta ogni sei mesi	Si	3 volte alla settimana camminata veloce 10 km. Al termine un po' affaticata ma rilassata	Problemi congeniti e/ o ereditari, stile di vita errata	Stanchezza e difficoltà respiratoria	Buono. Esami ematochimici una volta all' anno e monitoraggio della pressione settimanale con anche controllo ossigenazione periferica
Pia	61-70	Laurea Magistrale	Non lavoro	Non fumo	Una volta al mese	Si	Camminare in montagna.Bene	Colesterolo Glicemia.Ipertensione.Sovrapp eso	Iperyltensione sovrsppeso	Esami clinici
Giulia	61-70	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Una volta all' anno	Si	Riordino in ripostiglio. Stremata.	alimentazione	ipertensione ipercolesterolemia	esami di laboratorio
Lucia	61-70	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Una volta all' anno	No	Bici 30 km	Cattiva alimentazione	Stanchezza	Esami
Rita	61-70	Laurea Magistrale	Non lavoro	Non fumo	Una volta all' anno	No	Fare un piccolo trasloco. Stanca	Stress, familiarità	Affaticamento, tachicardia o aritmia	Da sintomi particolari. Non utilizzo alcuno strumento

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Adelaide	61-70	Laurea Magistrale	Non lavoro	Fumo più di 10 sigarette al giorno	Una volta all' anno	Si	Passeggiata	Fumo alcolici alimentazione vita sedentaria	Affaticamento	Indagini cliniche
Elisa	61-70	Laurea Magistrale	30 - 40 ore (Tempo Parziale - Tempo Pieno)	Fumo più di 10 sigarette al giorno	Una volta all' anno	No	Non ho svolto attività particolarmente imoegnativa	Più fattori come sti di vita, alimentazione ecc., ma anche genetici	Non credo che sia diversa da quella maschile. Forse l infarto è più presente nei maschi.	Stato di benessere soggettivo. COntrollo P, A. Esami ematici
Cloe	61-70	Laurea Magistrale	Non lavoro	Non fumo	Una volta all' anno	No	Nessuna	Aterosclerosi	Dispnea	No
Lore	61-70	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Una volta ogni sei mesi	Si	Giardinaggio ; stanca e accaldata	Stile di vita e genetica	Varie	Esami bioumorali, prevenzione primaria e secondaria
Adriana	61-70	Laurea Magistrale	Meno di 20 ore per settimana	Non fumo	Una volta ogni sei mesi	No	Ballo di solito al seno due volte la settimana con ottima sensazione di relax. In questo periodo tutti è più complicato.	Attribuisco gran parte di responsabilità all'alimentazione	Non lo so. Ma immagino i soliti sintomi di dolore al petto	Analisi periodiche
Consuela	61-70	Laurea Magistrale	Non lavoro	Non fumo	Una volta ogni sei mesi	No	Camminata veloce. Al termine: assetata	Credo che possano essere conseguenza di malformazioni (ereditarie/congenite), sovrappeso, poco movimento, fumo, uso di medicinali erronei	Affanno, tachicardia, gonfiore delle gambe, spossatezza	Dal buonumore, dal fatto se dormo bene, dal fatto se non mi stanco facilmente, dal fatto se mangio il giusto. Non utilizzo alcuno strumento se non l'ascolto del mio corpo.