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Lifelong Lifewide Learning

RICERCHE

Dati ESS sulla percezione dei vaccini in Italia. Un modo di pensare l'alfabetizzazione negli ambienti sanitari.

ESS data on the perception of vaccines in Italy. A way to understand literacy in health environments.

Manuela Bonacci, Istituto Nazionale Analisi Politiche Pubbliche

ABSTRACT ITALIANO

Questo articolo intende analizzare i dati del Round 8 dell'European Social Survey (ESS) che riguardano la percezione dei vaccini in Italia nel 2017, in relazione alla fiducia nella comunità scientifica e nelle aziende farmaceutiche.

Le opinioni e i punti di vista degli italiani saranno esplorati in termini di percezione dei cittadini della loro salute, valutazione del sistema sanitario nazionale, del sistema educativo ed economico e fiducia nelle istituzioni politiche, attraverso un'analisi comparativa transnazionale.

Va tenuto conto che nel 2016 si è avviato in Italia un dibattito sui vaccini in cui il movimento No Vax è stato molto attivo, generando la diffusione di *fake news* e esitanza rispetto ai vaccini.

In un contesto in cui l'informazione assume una siffatta importanza e i dibattiti sulla vaccinazione raggiungono un tale profondo interesse, è rilevante capire se gli individui sono in grado di comprendere e gestire con un grado sufficiente di *literacy* tutte le informazioni offerte.

L'ESS è una fonte valida per l'alta qualità dei dati e per la varietà di aspetti con cui si confronta

ENGLISH ABSTRACT

The objective of this paper is to analyse European Social Survey (ESS) Round 8 data with regards to the perception of vaccines in Italy in 2017, in connection with the confidence in the scientific community and trust in pharmaceutical companies.

Opinions and views of Italian people are further explored in terms of the perception of citizens' own health; the appraisal of national health services, the evaluation of education system and economy and trust on political institutions within a comparative cross-country analysis.

It is to be recorded that in 2016 the debate on vaccination had started in Italy and the No Vax movement was very active, generating the spread of fake news and misinformation, together with hesitancy regarding vaccines.

In a context where health information assumes such a great importance and debates on vaccination have risen such a deep interest, it is relevant to understand if individuals are able to understand and manage with a sufficient level of literacy all provided information. The ESS is a valuable data set due to its high quality, but also for the variety of topics it deals with.

Introduction, context and research objectives

The main objective of this paper is to analyse European Social Survey Round 8 data with regards to the perception of vaccines in Italy in 2017, in connection with the confidence in the scientific community (in relation to vaccines) and trust in pharmaceutical companies. The aim is to understand the awareness of Italian people regarding health issues and considering how health literacy is developed in Italy. Opinions and views of Italian people are further explored in terms of the perception of citizens' own individual health; the appraisal of national health services, the evaluation of education system and economy and, finally, trust on political institutions, such as Parliament and the national

Autore per la Corrispondenza: Manuela Bonacci, Istituto Nazionale Analisi Politiche Pubbliche.
E-mail: m.bonacci@inapp.org

government, within a comparative cross-country analysis. The following paragraphs of this section are intended to introduce some preliminary aspects, such as the specific survey used, the national context of vaccine in Italy and the concept of 'health literacy'.

Italian participation to the European Social Survey (ESS)

The present analysis is based on the European Social Survey (ESS) (1) Round 8 survey, conducted in Italy in 2017.

The European Social Survey is a comparative survey of social and political values and attitudes established in 2001 at the National Centre for Social Research (currently NatCen Social Research) (2) in London and it is now in its 10th Round of data collection. The survey is carried out to the highest methodological standards. All participating countries have to sign up a rigorous set of protocols and procedures regarding how the survey has to be developed. Every two years, face-to-face interviews are carried out and participants are selected using strict random probability sampling methods.

In 2013, ESS was given the status of a European Research Infrastructure Consortium (ERIC).

The ESS ERIC currently has 17 member countries (Austria, Belgium, Czech Republic, Estonia, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Slovenia, Sweden, United Kingdom), one observer country (Switzerland) and 6 guest countries (Finland, Iceland, Israel, Russia, Slovakia, Spain). In total, 24 countries participated in the last round of data collection (Round 9 in 2018-2019). Over the years more than 30 countries have been involved in the survey, but to a different degree (as displayed in the following Figure 1).

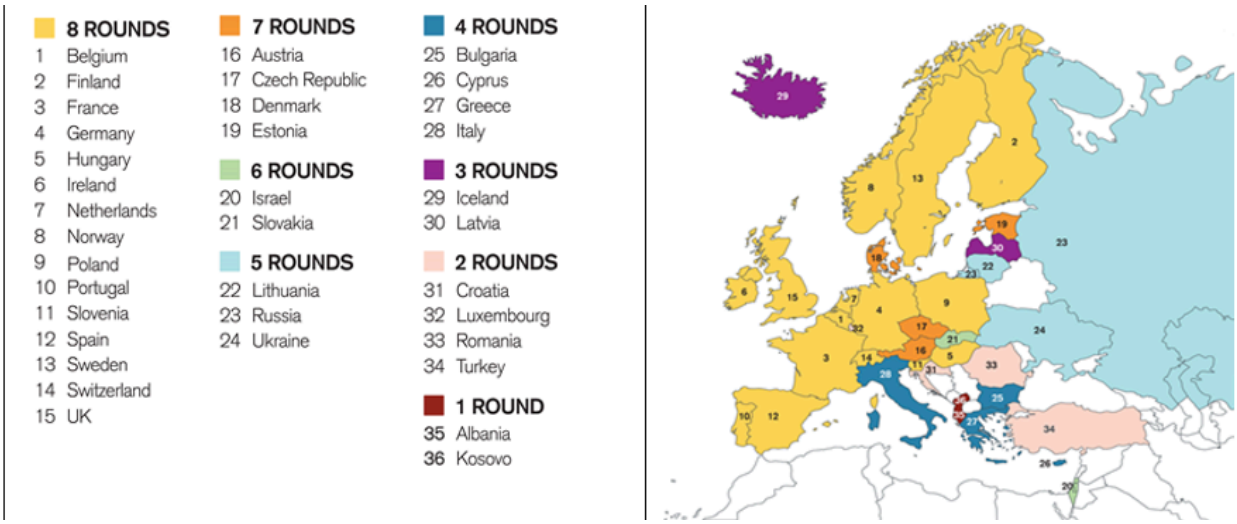

FIG. 1 - COUNTRIES PARTICIPATION IN THE FIRST 8 ROUNDS OF ESS (INAPP ELABORATION OF ESS INFORMATION)

As many other countries, Italy had a discontinuous participation till 2017.

Italy participated in Round 1 (2002), Round 2 (2004) and Round 6 (2012) with the involvement of several Italian universities. In 2017 Inapp (3) became full member of the ESS ERIC and succeeded in participating to the Rounds 8 in 2017. Even though it was carried out one year later than the other participating countries, the survey was positively

welcomed by the research community, nationally and internationally. Thus, Round 9 (2018) was completed and Inapp is now going to develop Round 10 in 2021. This Round was supposed to be held in 2020, but it was one year later adjourned for the coronavirus pandemic for all participating countries.

The survey is carried out through a general questionnaire, common to all participating countries, developed in national languages after a complex translating process from the original English source questionnaire.

It is made up of core sections, rotating modules and additional (optional) national questions.

Core sections are sets of questions repeated in each Round, with very few variations from one Round to the other. Rotating modules are specific sets of questions included in some Rounds. Additional national questions are optional and usually used by countries to include questions relevant at national level in that particular moment.

In Round 8 questionnaire there were 5 core sections:

- Media use; internet use; social trust;
- Politics, including: political interest, trust, electoral and other forms of participation, party allegiance, socio-political orientations, immigration;
- Subjective wellbeing, social exclusion, crime, religion, perceived discrimination, national and ethnic identity, refugees;
- Socio-demographic profile, including: household composition, sex, age, marital status, type of area, education & occupation of respondent, partner, parents, union membership, income and ancestry;
- Human values scale.

The two rotating modules included in Round 8 were:

- Climate change and energy, including: attitudes, perceptions and policy preferences;
- Welfare, including attitudes towards welfare provision, size of claimant groups, attitudes towards service delivery and likely future dependence on welfare, vote intention in EU referendum.

Plus, Italy added to the general questionnaire few national questions. Among these, three questions regarded opinions on:

- vaccines;
- the scientific community (in relation to vaccines);
- and pharmaceutical companies.

This data set is a valuable source, due to its high quality and methodological standards, but also for the variety of topics it deals with and for the active participation of almost all European countries and other important countries, such as Russia, Switzerland, Ukraine, Israel, etc.

It allows international comparison on the above-described contents with all participating countries and it certainly creates a basis of information on how human values, political trust; social and environmental values; ethnic and religious groups, change over time in a wide range of countries.

Perception of vaccination in Italy

In Italy, during the years 2015-2017 there was a loss of confidence towards vaccination, resulted in a lower vaccine coverage and the need for more severe legislative measures at local and central levels (regions and ministries), especially when enrolling children in compulsory education pathways.

This is an issue which is still very relevant, considering the unexpected Covid-19 pandemic which has affected almost all countries and had risen the role and effects of vaccines in our contemporary society. This is an aspect which deals directly with trust in public institutions and in the scientific community in general, but also with the ability individuals must create their own health pathways.

As anticipated above, it is in 2017 that Italy included national questions regarding vaccination to the general questionnaire of the European Social Survey (Round 8), in order to have direct information for the debate.

It is to be recorded that in 2016, in Italy, an open dialogue on vaccination started, due to a law decree issued by the Gentiloni government, approved on May 19 and entered into force on June 8, 2016 (4). This legislative act reintroduced the mandatory vaccinations for the enrolment in compulsory education, for students between 0 and 6 years. In the decree, the number of mandatory type of vaccinations to carry out, was also increased. During the same period, some medical doctors and researchers were expelled from the national medical register (Bocci, 2017), because of their critical positions on the use of vaccines which were based on some researches stating that vaccines would contain nanoparticles and heavy metals, or alleged contamination, etc… researches never scientifically confirmed, however.

After the promulgation of the decree, a self-defined movement was created, named Free vax, with the aim of asking for more freedom in this regard. However, the movement developed into a more direct action towards the law obliging the mandatory vaccination, a more antivaccine movement instead of a “free will” (Drogo, 2017), the so-called Antivax movements (also known as No Vax) (5), who declared to be averse to vaccines. One of the key points of the anti-vaccination propaganda claims the non-existence of the so-called "herd immunity" or "herd immunity" effect (6). According to the No Vax, the herd effect does not exist and the reduction of pathogens within the population is due to the improvement of hygiene conditions over the decades.

Following the 2017 vaccination obligation decree, several episodes of violence related to it happened in Italy: for example, some politicians, who had voted in favour of the proposal, were physically and verbally attacked by many No Vax demonstrators. Besides, fake news disseminated by No Vax regarding vaccination risks and effects were considered the cause for the increase of vaccine hesitancy in those years.

In this context, there are several factors which influence the acceptance that led people not to get vaccinated or against disease prevention. Among these, the level of education, age, gender, but also the lack of recommendation by health personnel or the lack of information on the benefits and relative safety of these procedures. Finally, a low level of ability to interpret and elaborate information related to personal health.

The COVID-19 pandemic has led governments to extend and strengthen rules on vaccination recommendation, and various Regions (7) in Italy have extended compulsory seasonal influenza vaccine not only to elderly, children and people in need, but also personnel working in key sectors (such as health care, police, schools).

Due to the pandemic emergency mass media, social media, family chats and political debates nowadays are more focused on vaccination and health issues than before and this type of information is present and discussed extensively. Thus, the ability to understand correct information and disclose fake communications becomes a requirement which cannot be left out.

To better face health emergencies in the future and increase the level of health protection of families, it is important to give policy makers information useful to define *ad hoc* strategies to prevent misinformation.

Health literacy concept

In a context such as the Italian one, where health information given by media, politicians, policy makers assumes such a great importance, and debates on vaccination have risen such a deep interest, it is relevant to understand if individuals are able to comprehend and manage all provided information for their own private daily life and even more during a pandemic.

The ability of individuals to read and understand written health-related material is defined as health literacy. There are not many studies in Italy on health literacy, even if the concept was first introduced in the 1970s by Professor Scott K. Simonds (1974). Interest and diffusion grew especially in the United States in the clinical field, primarily due to the multi-ethnicity of the population and the repeated misunderstandings between healthcare personnel and patients (regarding therapies). Later, attention increased in other parts of the world, including Australia and Europe, where in addition to the clinical field it was extended to citizens' literacy.

In 1998 the World Health Organization (WHO), set the following definition in the Glossary of Health Promotion (WHO, 1998):

"Health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health.

Reference: new definition Health literacy implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. Thus, health literacy means more than being able to read pamphlets and make appointments. By improving people's access to health information, and their capacity to use it effectively, health literacy is critical to empowerment. Health literacy is itself dependent upon more general levels of literacy. Poor literacy can affect people's health directly by limiting their personal, social and cultural development, as well as hindering the development of health literacy."

WHO essentially frames the concept in the dimension of life skills, stating that health literacy implies the achievement of a level of knowledge, skills and awareness useful to

take actions to improve individual and community health, promoting the change of lifestyles and life conditions.

Initially, attention to health literacy had been mainly limited to the health sector in the strict sense and, specifically, to communication between health services and patients. Over the past 20 years, the concept of health literacy has seen a progressive growth in its meaning and dimensions, including numerous factors that influence a person's ability to access, understand and use health information which comes from multiple sources.

Recently a new challenge applies to the concept of "public" health literacy, in which individuals are able to understand not only health information which concerns them closely, but also the ones affecting the whole community. As stated by Freedman (2009) "Whereas health literacy has traditionally been operationalized as an individual-level construct, public health literacy takes into account the complex social, ecologic, and systemic forces affecting health and well-being"

In this sense, public health literacy becomes an essential and reliable competence to understand a wider range of information, for example, the role of an environmental risk factor and to recognize any distortions in the information reported by the media.

However, health literacy goes beyond the individual ability to obtaining or reading information. It occurs when the expectations, preferences, and competences of individuals are identified and elaborated in dedicated lifelong and life wide pathways.

It also, naturally, focuses on how health is regarded, understood and interpreted. It relates to people's opinions of health and how these opinions are formed, also considering preconceived ideas and belief. This includes media, family and peers influence on the general understanding of health, as well as how society, as a whole, influences the trust in national systems (health, education, economy).

The effects of low levels of literacy could undermine policies and strategies related to vaccines, pronouncements of the scientific community, policy and services delivered.

Understanding how literacy is developed in a country is always a very useful information for decision makers. The main example in this sense is represented by the Programme for the International Assessment of Adult Competencies (PIAAC) (8). PIAAC is an international survey conducted by OECD (Organization for Economic Co-operation and Development) in over 40 countries and measures the key cognitive and workplace skills needed for individuals to participate in society and for economies to prosper. The Survey measures adults' proficiency in key information-processing skills - literacy, numeracy and problem solving - and gathers information and data on how adults use their skills at home, at work and in the wider community.

In 2012, during OECD-PIAAC first cycle (9), for the first time competences of adults were concretely tested to understand the level they possess and compare the results cross-country. PIAAC results have been used to rethink and reorganize education and training provision and the system of Labour Market in those countries were literacy and numeracy levels were not satisfactory. This was also the case of Italy, where percentage of respondents with low literacy skills (10) was very high.

The following elaboration (Figure 2) makes it possible to compare the percentage of the population (16-65 years old) with low and high literary skills from seven selected countries.

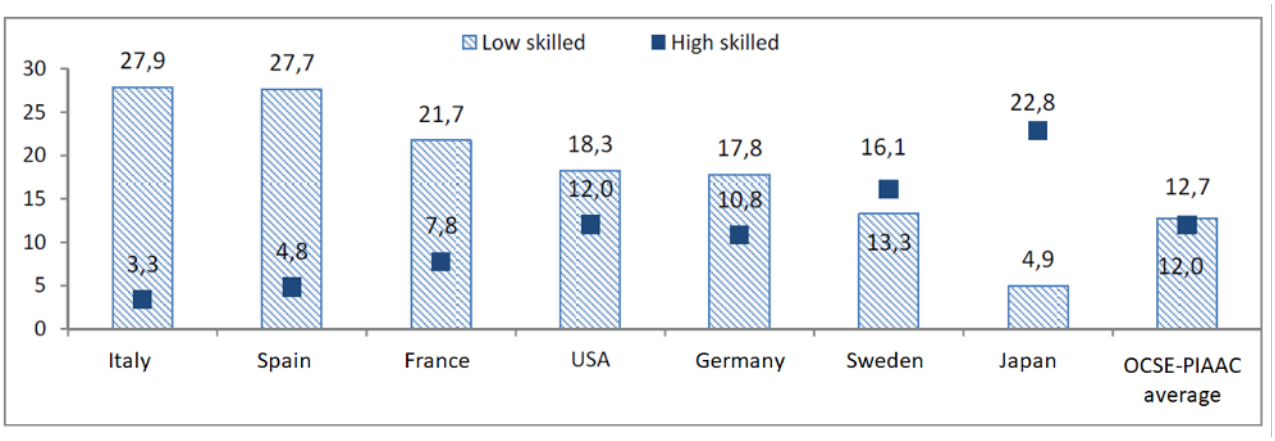

FIG. 2 - PERCENTAGE OF LOW SKILLED ON THE ENTIRE POPULATION: INTERNATIONAL COMPARISON (SELECTION OF COUNTRIES) (INAPP ELABORATION ON OCSE-PIAAC 2012 DATA)

Japan, for instance, is the country with the lowest percentage of low-skilled (4.9%). In Italy and Spain the phenomenon exceeds the 27% of the respondents. Specifically, the Italian low-skilled population is 27.9% of the total, and this is the highest percentage of participating countries.

Literacy is considered vital to economic development as well as individual and community well-being, *digital literacy* is a current trending topic in the global digitalized world and *health literacy* appears to be crucial in the 21st century for individuals to face emerging diseases and epidemic.

In this paper we analyse only ESS data, not health literacy levels, but all the analysed information will provide a better understanding of how health literacy is developed in Italy in connection with specific issues.

Synthesis of research objectives

Starting from the above-described introductory contextual aspects, in section 2 we will explore determinants of vaccine attitudes surveyed within the three national questions, such as:

- the perception of vaccines in Italy,
- the confidence in the scientific community (still connected with vaccines),
- and the trust in pharmaceutical companies,
- also analysed by age, gender and qualification level.

In section 3 the analysis is a cross-country comparison of the "perception of citizens' own individual health", which analyses the individual aspects linked to health, followed by the evaluation of connected systems, such as "the national health services" and the "education system". Furthermore, the analysis will identify the opinions on the "economy" and "political institutions" (Parliament and the national government) which will provide a more macro-economic contextual background.

The concluding section will identify key aspects or critical issues to open further discussions on these particularly relevant areas.

Italian national questions data analysis

As explained above, within the European Social Survey - Round 8, Italy included a set of national questions to the general questionnaire. In this section the question regarding how vaccines were perceived is analysed, together with two other related questions on how the scientific community and pharmaceutical companies were considered.

The main question asks whether "vaccines wear down the immune system and expose it to various diseases." The following question asks whether "the recommendations of the scientific community can be trusted with regard to vaccines". A third one asks whether "pharmaceutical companies are hindering effective treatments to heal serious diseases because they fear losing profits" (11).

The analysis considers several factors which influence the acceptance of vaccinations, the trust in the scientific community and confidence in pharmaceutical companies, such as age, gender and level of education of the respondents. These determinants give wider information on how this theme is perceived by Italian respondents and may help to understand the expectations, preferences and competences of individuals in connection with health information.

Perception of vaccines

The first national question regarded the trust in vaccines. When asked whether "vaccines may hurt", almost half of the respondents disagree or strongly disagree (49.14%) with this concept.

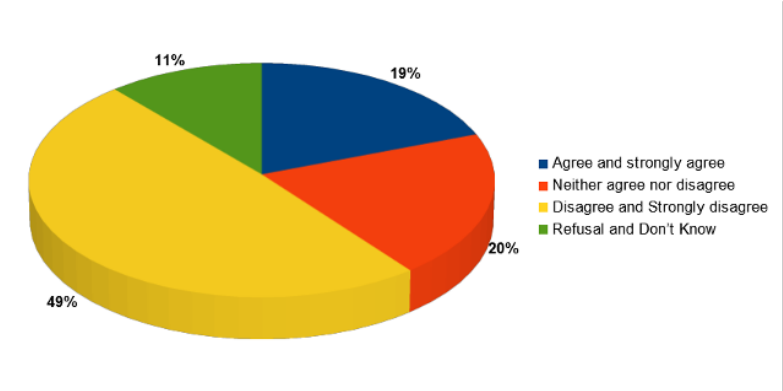

FIG. 3 - "VACCINES WEAR DOWN THE IMMUNE SYSTEM AND EXPOSE IT TO VARIOUS DISEASES"[X1] (OWN ELABORATION OF ESS ROUND 8 DATA) (12)

However, this favourable attitude is somewhat tepid. It is to be negatively noted that around 20% is against vaccination procedures (agree and strongly agree: 19.33%) and another 20% has not a clear position (neither agree nor disagree: 20.16%). It is to be recorded that in 2016 the debate on vaccination had started in Italy and the No Vax movement was very active.

In fact, compared to other countries, quite a high percentage of people who have no confidence in vaccines is reported in Italy. Data from the *Vaccine Confidence Project* (www.vaccineconfidence.org) acknowledged that in 2016 scepticism towards vaccines is extremely variable by geographical area, with higher percentages in Europe: in particular in France, where 41% of the population has doubts on their safety, followed by Russia (27%) and Italy (21%). The percentage in US (13%), Germany (10%) and the United Kingdom (9%) are equal to or lower than the world average, which is around 12%.

Also, two years later, the "*State of vaccine confidence in the EU 2018*" (a Report for the European Commission) confirmed the same trend, highlighting an increasing diffidence in vaccines by some European citizens. Despite the fact that the majority of citizens in the EU believes in the importance, efficacy and safety of vaccines, it is registered that there has been an increasing intensity of mistrust in many countries since 2016.

In the European report the Italian respondents stated that vaccines for children were very important (91.7%), while for the MMR (Measles-the Mumps-Rubella vaccine) the importance was slightly lower 80.6%. The importance attributed to seasonal influenza vaccines was much less, only 67.5%. Regarding the influenza vaccine, the perceived safety of Italian respondents was 72.9% of the interviewees, compared to the European correspondent figure of 67.8%.

Despite the No vax movements and the communication uncertainties regarding vaccines, informed by medical clusters and media, especially social media, Italians still found themselves having a positive perception of vaccinations, which demonstrates a general awareness and ability to decide independently for their own and their family members health, highlighting a good level of literacy on health care subjects.

A high level of knowledge and awareness towards this issue is quite important in a country where the debate on vaccination was raised up just during the same period of data collection.

Especially regarding themes such as vaccines or climate change or the most current response to the Covid-19 emergency, scepticism (mistrust) towards the results and methods of scientific research seems to many not only pointless but useless.

Confidence in the scientific community for vaccines

The second question in the Italian specific section of the questionnaire, related to vaccines, concerned the public confidence in the scientific community, which appears to be relatively stronger than trust in vaccines, according to the respondents.

Almost 6 in 10 Italian respondents reported a great deal of confidence (agree and strongly agree) in the scientific community about vaccines. Less than 10% of the respondents disagreed or strongly disagreed. Thus, the vast majority of people have confidence in the scientific community, and we can consider scientists (especially medical ones) among the top of trustworthy professions and this encompasses expectations about scientific or medical outcomes and results.

There is always an interest in understanding to what extent public trusts science and the scientific community. Public trust in the scientific community is usually connected with

vaccines, climate change, and technological progress and therefore relevant differences in opinions about scientists in each of these domains are reported.

Besides, when connected with vaccines, trust on the scientific community is directly related to the healthcare system. For example, the phenomenon of vaccine hesitancy, a tendency to question vaccine policies, and to seek alternatives or to refuse vaccination, impact on the confidence public has on the healthcare system.

In this sense, trust in the medical scientific community can influence national decision-making and health-related strategies and it is a valid component to understanding the system's credibility, in general.

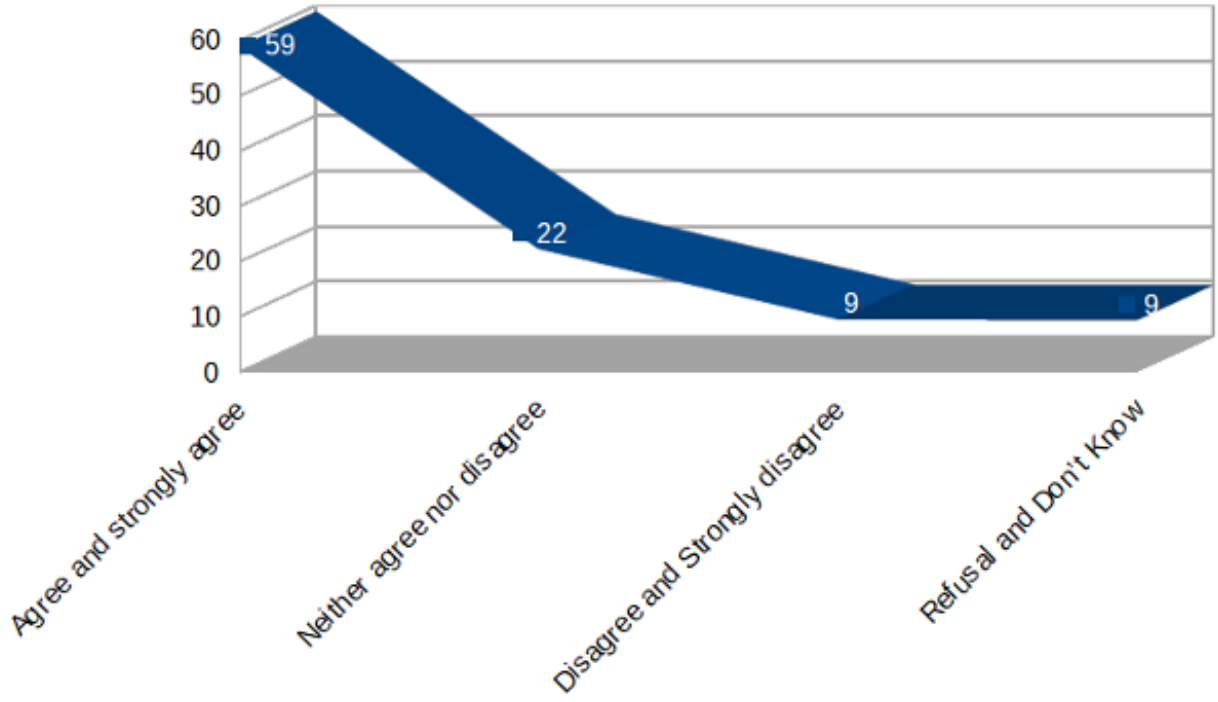

FIG. 4 - "WITH REGARD TO VACCINES, THE RECOMMENDATIONS OF THE SCIENTIFIC COMMUNITY CAN BE TRUSTED?" [X2] (OWN ELABORATION OF ESS ROUND 8 DATA)

Gazmararian (2005) states that "one of public health professionals' major challenges is to provide the public with messages that are understandable and based on science"

In Italy, for instance there was - in recent years - a debate regarding the lack of confidence, tending to a marked adversity, towards "official" medicine and allopathic doctors, towards homeopathic medicine, a phenomenon which is consistent with the No Vax movement (connected to child vaccination, mainly MMR).

However, the pandemic emergency in 2020 for the Covid-19 showed the importance of healthcare professionals as vital key workers, working unceasingly to try to combat the virus and to help seriously affected patients who are on the front line of this pandemic. The expertise and competence of doctors and nurses has been therefore highly appreciated.

It will be important to detect if the coronavirus crisis has strengthened citizens' confidence in scientific community, in particular the medical one, confirming they are considered the top trustworthy professionals.

We can note that there is a clear change in the way the public listens to the opinion of experts and welcomes its competence during the pandemic. People started to feel more interested in scientific information, they want to know more, they want to understand effects and risks. It seems they are almost willing to learn even the rudiments of the language of mathematics and epidemiology to understand the data themselves. And in fact, doctors, vaccine experts, mathematicians and statistical physicists called to create models, have become very popular since the pandemic has started.

In Italy, where it seems that the public is looking with greater interest at what the experts say and citizens', trust in scientists seems to be very high. This innovated attitude towards measures and approaches adopted is contributing to the development of awareness and responsiveness towards health issues, thus implicitly showing improvements of the level of literacy in this context.

To be noted that this very positive public confidence in scientists - in Italy opposes with trust in other institutions and systems, such as the legislative and political decision makers and health and education systems, as shown in Section 3.

Trust in pharmaceutical companies

The third question in the Italian specific section of the questionnaire, related to vaccines, regards the trust in pharmaceutical companies.

As shown below pharmaceutical companies, in Italy, are in a distrust status, 44.1% of respondents did not trust pharma. Compared to the previous two Italian questions analysed before, pharma remained the least trusted at just 16.3%. Most respondents expressed either a "strong agree" or "agree" on pharmaceutical companies hindering effective results and following profits.

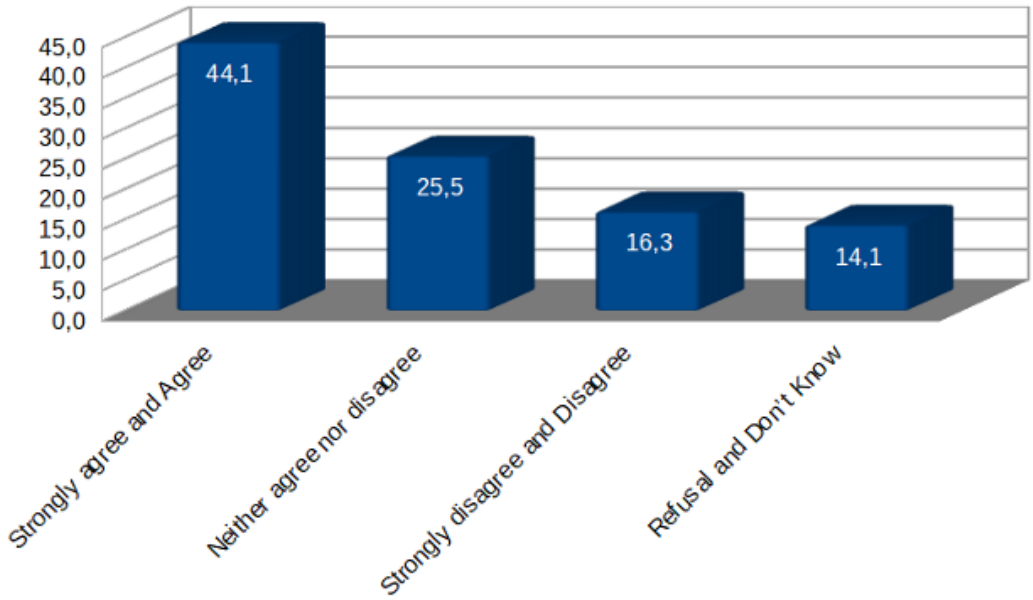

FIG. 5 - "PHARMACEUTICAL COMPANIES ARE HINDERING EFFECTIVE TREATMENTS TO HEAL SERIOUS DISEASES BECAUSE THEY FEAR LOSING PROFITS" [X3] (OWN ELABORATION OF ESS ROUND 8 DATA)

This negative opinion was also confirmed in the Italian survey on the "*Opinion on pharmaceutical companies based on their scientific innovation*" (Censis, 2019) with a negative rating score of 45.7%, motivated by the following reason: "because prices of new medicines are too high and it cannot be guaranteed that everyone who needs them may have access to them because of economic problems".

This lack of confidence may relate to the lack of transparency that all pharma companies adopt in their communication. Globally, pharma companies should attempt to be more transparent regarding pricing and real effects of treatments as expected by users today. This need of transparency is also linked to the fact that in general consumers (of medicines and treatments) possess little knowledge of the products they consume, but they are becoming more demanding of information in terms of costs, risks and effects.

The *ratio* is that consumers may feel frustrated if they do not know what they are paying for. This is the reason why consumers are pushing for a more open and honest pharma industry, regulated by price transparency and full disclosure of clinical expenditures. This dissatisfaction diminishes trust, so it is imperative for pharma companies to readily rethink their communication to inform their consumers.

Considering that pandemic emergency has rightly drawn the attention of the public on the pharmaceutical industry, regarding a new vaccine or treatments to be used to fight the Covid-19, pharma companies have the possibility to restore their credibility in the eyes of patients, policy makers and the rest of the public. This emergency event may be helpful to bridge the gap and attempt to turn the sceptical mass population into the less sceptical informed public, as the critical approach demonstrated in case of less transparent public communication derives from the ability to process health information autonomously.

Differently the risk is that pharma industry will lose relevance, while the non-profit groups which are against the use of medicines (such the No Vax for instance) may gain more and more trust (without being supported by scientific results). As an example, even regarding the new vaccine to prevent Covid-19 some No Vax, No Masks, pandemic deniers' movements have already expressed a negative evaluation about vaccines and treatments, even before a vaccine had been developed!

The lack of trust is a huge threat for the pharma industry, but also an important indicator of how communication and information have been considered more and more important over years. It points out that citizens want to be informed of risks and effects of vaccines, medicines and treatments. Citizens trust the scientific community but ask for more transparency and truth from pharma industry. This is an attitude demonstrating that the level of literacy in this context is quite responding.

Distribution by age and gender of the three national questions

There are many different factors that may impact or affect the components of trust and mistrust, age and gender included.

Analysing ESS data on the three Italian national questions, with regards to vaccines, it is to be noted that the results by age groups are statistically non-significant, globally. Thus,

perception does not differ by age groups.

It was an expected result in connection with trust in the scientific communities, whose recommendations are highly considered widespread; more surprisingly were findings regarding vaccines, where some age groups were supposed to be more hesitant about vaccination and how the risks are perceived. For instance, the Report for the European Commission "*State of Vaccine Confidence in the EU 2018*" informed that most age groups under 65 have less confidence in the safety and importance of both the vaccine for children (such as MMR) and seasonal influenza vaccines and vaccines in general, than over 65's.

But this is not the case for ESS Round 8 Italian respondents.

With this regard, data slightly significant are those related to age distribution for the question on trust in pharma companies, which detects a minor difference in the position of very young subjects, as shown in the table below.

Pharmaceutical companies hinder the development of effective medications	1-2 Agree	3 Neither agree nor disagree	4-5 Disagree	Dif
< 24	44,7%	27,8%	27,4%	*17,3%*
25-34	51,2%	28,5%	20,3%	*30,9%*
35-44	55,2%	26,9%	17,9%	*37,4%*
45-54	55,8%	26,9%	17,2%	*38,6%*
55-64*	48,1%	35,4%	16,5%	*31,6%*
65 >	50,6%	31,4%	18,0%	*32,6%*
Total	**51,4%**	**29,6%**	**19,0%**	***32, %***

**small number of respondents*

TAB. 1 - ESTIMATION BY AGE ON "PHARMA COMPANIES HINDER THE DEVELOPMENT OF EFFECTIVE MEDICATIONS" (OWN ELABORATION OF ESS ROUND 8 DATA)

In fact, analysing findings (without refusals and don't knows), it emerges the difference between those young respondents (< 24) who tend to have less distrust on pharma than middle-aged and old population. Also, the difference (17%) between the positive and negative attitude on the question is smaller than the other age groups.

Same situation analysing gender distribution. Findings by gender are statistically non-significant. Different findings in the "*State of vaccine confidence in the EU 2018*" where estimations by gender were - for most countries - statistically non-significant, except for three European countries, among which Italy, showing a statistically significant difference in the way people of both genders experience vaccine safety, stating that: "women are less likely than men to agree that vaccines are safe".

With regards to data from ESS Round 8, a slightly significant element emerges from the analysis of gender distribution regarding trust in the scientific community.

As shown in the table below, female respondents agree more, while male subjects disagree more.

For vaccines trust scientific community	1-2 Agree	3 Neither agree nor disagree	4-5 Disagree	Refusal / don't know
Male	57,7%	22,5%	10,6%	9,2%
Female	60,1%	21,9%	8,5%	9,5%
Total	**58,9%**	**22,2%**	**9,5%**	**9,3%**

TAB. 2 - ESTIMATION BY GENDER "FOR VACCINES TRUST SCIENTIFIC COMMUNITY" (OWN ELABORATION OF ESS ROUND 8 DATA)

The case of the greater trust of women is probably due to the habit of women to carry out routine and gynaecological checks (also connected to eventual pregnancies), thus receiving many hygienic-behavioural recommendations from health personnel, general doctors, gynaecologists and obstetricians. Vaccinations are therefore perceived as priorities for themselves and for their children and parents, if they have been clearly recommended by those dedicated professionals (gynaecologists, paediatricians, geriatricians, etc.).

Considering that differences are not very significant; it is suggested to promote services to improve the understanding and awareness regarding health issues, equally dedicated to all age groups and both female and male citizens. Though it is evident that a major effort should be dedicated to the young population who is always in need of deeper information as they are the protagonists of the culture and society of the future.

The development of new individual lifestyles, focused on better individual health conditions, implicitly means to have reached a higher level of personal ability to access and use health information delivered by media and social media, without great differences in terms of age and gender.

Distribution by education level of the three national questions

Another relevant factor that affects confidence and mistrust on health issues is the education level.

The hypothesis based on the analysis of this data was that higher educated citizens should react differently to questions regarding trust in vaccines, confidence in the scientific community and in pharma companies from less educated ones, namely having more trust in vaccines and in the scientific community and less trust in pharma companies (because of lack of transparency).

Vaccines wear down the immune system and expose it to various diseases	1-2 Agree	3 Neither agree nor disagree	4-5 Disagree
Lower secondary education, primary or no formal education	24,4%	24,0%	51,6%
Upper secondary education level (secondary schools) or vocational qualifications	20,9%	23,9%	55,2%
Tertiary education, university degree or higher qualification	15,8%	15,2%	69,1%

TAB. 3 ESTIMATION BY EDUCATION LEVEL "FOR VACCINES TRUST SCIENTIFIC COMMUNITY" (OWN ELABORATION OF ESS ROUND 8 DATA)

Findings (without refusals and don't knows), confirmed the association between educational levels and the perception of vaccines. The higher the qualification level is, the lesser it is believed that vaccines wear down the immune system and expose it to various diseases.

If the difference between people with an upper secondary education qualification and those with a lower qualification is only 3.6 percentage points, the difference between

respondents with tertiary education level and people with a lower education level is quite high; 13.9 points with upper secondary education qualifications and 17.5 with lower qualifications.

With regard to vaccines, the recommendations of the scientific community can be trusted	1-2 Agree	3 Neither agree nor disagree	4-5 Disagree
Lower secondary education, primary or no formal education	63,5%	26,8%	9,8%
Upper secondary education level (secondary schools) or vocational qualifications	64,4%	23,6%	12,0%
Tertiary education, university degree or higher qualification	73,3%	18,6%	8,1%

TAB. 4 - ESTIMATION BY EDUCATION LEVEL "WITH REGARD TO VACCINES, THE RECOMMENDATIONS OF THE SCIENTIFIC COMMUNITY" (OWN ELABORATION OF ESS ROUND 8 DATA)

With regards to the confidence in the scientific community, higher levels of education are positively related to higher level of trust in the scientific community.

The 73.3% of respondents with tertiary education level trust scientific community compared to around 10 percentage points less of people with a lower education level (64.4% secondary education level; 63.5 % lower qualifications). Again, findings difference between people with upper secondary education qualifications and those with lower qualifications is minimal.

Pharmaceutical companies are hindering effective treatments to heal serious diseases because they fear losing profits	1-2 Agree	3 Neither agree nor disagree	4-5 Disagree
Lower secondary education, primary or no formal education	53,9%	30,4%	15,7%
Upper secondary education level (secondary schools) or vocational qualifications	52,6%	28,2%	19,2%
Tertiary education, university degree or higher qualification	40,7%	30,9%	28,4%

TAB. 5 - ESTIMATION BY EDUCATION LEVEL ON "PHARMA COMPANIES HINDER THE DEVELOPMENT OF EFFECTIVE MEDICATIONS " (OWN ELABORATION OF ESS ROUND 8 DATA)

Also, the last question confirms the original hypothesis. ESS Round 8 Italian respondents with higher level of education feel less distrust on pharma. People with lower qualifications levels trust less pharma companies, so the level of distrust decrease as education improves.

As expected, people with tertiary education level seem to be more responsive and receptive, demonstrating a good level of awareness and "ability to make effective and informed decisions regarding one's health within the various life contexts: at home, in the community, in the workplace, in the health system, in the political arena" (Kickbusch, Maag, 2005).

Cross-country data analysis

To contribute to understand citizens' awareness and perception of vaccines, the scientific community and pharma companies in Italy, the following paragraphs will analyse and compare the Italian context to the other countries participating in ESS Round 8, in terms of: perception of citizens' own individual health; the appraisal of national health services, the education system; economy and trust on political institutions such as Parliament and the national government.

This cross-country analysis will add more information to the national questions, contributing to define a vision, which is an active part to understand the level of literacy health environments in Italy.

Perception of individual health

Individual perceived health status is the self-perception of the respondent's health condition. By examining the relation between health perceptions and a range of other outcomes may help to explain a more general well-being condition and compare it to other countries' ones, in order to be able to change life behaviours and attitudes towards health in general.

In the ESS core section questions, respondents were asked to self-evaluate their own health ("*How is [your] health in general*?").

In many countries, participants felt their health in general 'good and very good', very close or over the average of the participating countries (around 67%). Few cases such as Russia, Portugal and countries in the Baltic area (such as Estonia and Lithuania) reported a less positive situation than the other countries, but still 'fair'.

Respondents from Switzerland, Ireland and Israel, followed by Sweden, Iceland, Austria and Norway reported a very positive judgement of their health, confirming a high level of well-being in these countries.

Respondents were asked to select the numerical point on the scale (from 0=extremely bad to 10 extremely good) that represented their response best.

In Italy the self-reported health measurement is quite positive (good and very good=67.8%; fair=25.9%; bad and very bad=6.3%), especially if we consider data in connection with the aging population. Many developed nations and advanced economies have an aging population due to falling birth rates and higher life expectancy. This aspect has a deep impact on the workload of health care systems and vaccination procedures for elderly people. This is also confirmed by the pandemic emergency happened this year which affected more adults and old people. The Covid-19 made it clear that national systems need to protect the elderly from age-related diseases, making vaccination a crucial mean to safeguard this population.

Though it is always difficult to analyse deeply cross-country information on health and lifestyles, this self-reported measurement represents the level of confidence in positive standards of living and well-being in general in 23 countries. In this sense the dimension of literacy in health environment, involving the knowledge, motivation and skills of individuals to access, understand and evaluate information for their daily health care,

disease prevention and health promotion, to maintain and improve their quality of life, is greatly important.

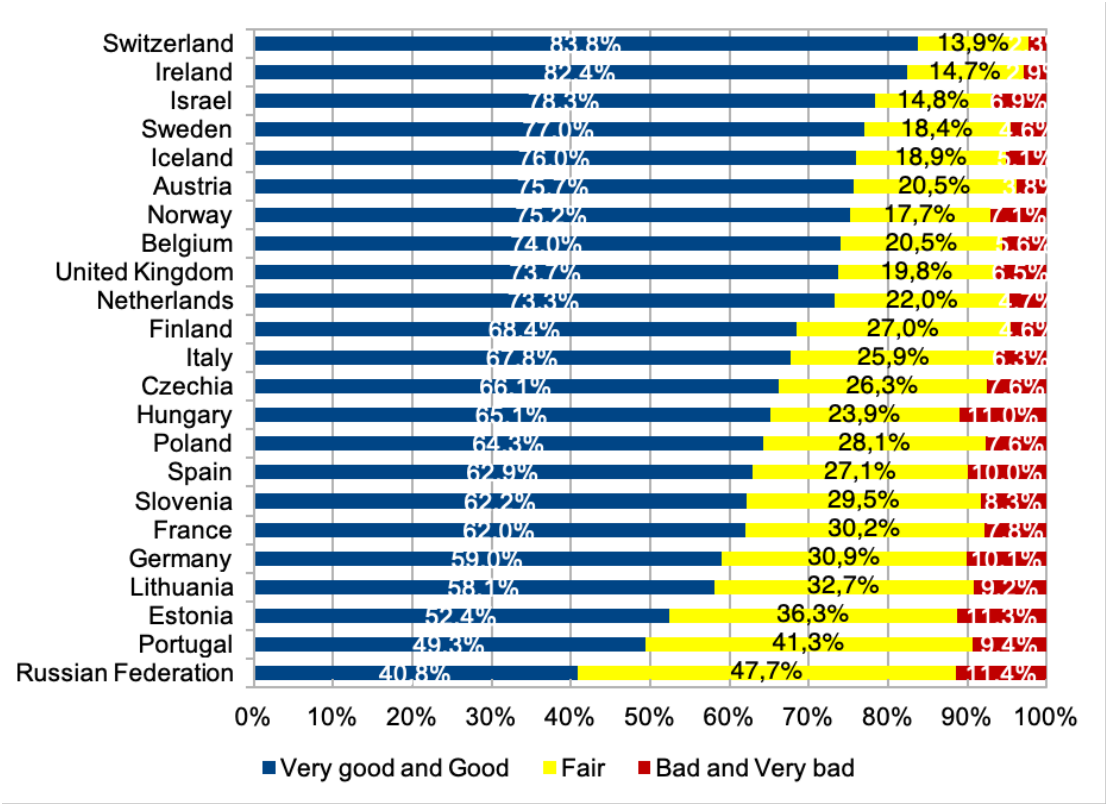

FIG. 6: - "HOW IS [YOUR] HEALTH IN GENERAL?"[C7] (OWN ELABORATION OF ESS ROUND 8 DATA)

State of health care services

The effective functioning of health care systems impact on the society in general. Several researchers have pointed towards a contemporary crisis of trust in health care systems and there have been many examples which made it clear. More research of public trust in health care systems could contribute to improving efficiency while protecting the health of the public and prevent the severe effects of mistrust.

Understanding how the health care system is assessed, can support long-term policies, also in terms of communication and development of competences.

The perception of the health care system is detected in the ESS core section, where respondents were asked to *"Say what [they] think overall about the state of health services in [their country] nowadays?"*.

Respondents had to select the numerical point on the scale (from 0=extremely bad to 10 extremely good) that represented their response best.

In the figure 7 the findings from participating countries.

In general, public trusts their own national health care systems very positively. Few countries, such as Hungary, Ireland, Poland and Russian Federation are less positive. While Belgium (58.1%), Switzerland (53.5%), Finland (52.6%) and Austria (50%) rated their national health care system extremely good.

State of health services in country nowadays	Extremely bad (0+1+2)	Extremely good (8+9+10)	Average (3+4+5+6+7)
Austria	2,8%	50,0%	47,2%
Belgium	2,0%	58,1%	39,9%
Switzerland	2,1%	53,5%	44,4%
Czechia	5,3%	23,0%	71,7%
Germany	6,6%	32,2%	61,2%
Estonia	13,7%	14,5%	71,8%
Spain	15,2%	21,7%	63,1%
Finland	2,1%	52,6%	45,3%
France	4,4%	33,4%	62,3%
United Kingdom	7,8%	25,8%	66,4%
Hungary	29,4%	6,4%	64,2%
Ireland	28,3%	8,3%	63,4%
Israel	5,9%	35,0%	59,1%
Iceland	16,8%	7,2%	76,0%
Italy	14,9%	17,9%	67,2%
Lithuania	18,6%	14,3%	67,0%
Netherlands	3,9%	29,2%	66,9%
Norway	2,4%	48,7%	48,9%
Poland	29,4%	8,6%	62,0%
Portugal	13,3%	19,0%	67,6%
Russian Federation	29,4%	5,6%	64,9%
Sweden	8,5%	20,8%	70,7%
Slovenia	19,1%	14,1%	66,8%
Totale	12,3%	26,1%	61,6%

FIG. 7 - "WHAT YOU THINK OVERALL ABOUT THE STATE OF HEALTH SERVICES IN [COUNTRY] NOWADAYS?" [B32] (OWN ELABORATION OF ESS ROUND 8 DATA)

Compared to the other participating countries, Italian respondents are quite positive towards the health care system. The system is perceived not extremely good (only 17%) nor extremely bad (even though 14.9% is a quite high rate) and most of the scores (67.2%) are attributed to an intermediate situation (rated from 3 to 7).

Italians' feeling of being protected by public coverage in their welfare needs and in the field of health is fair, but not excellent.

It is to be considered that in Italy the global economic crisis, which began in 2007-2008 as a financial crisis which developed into an economic crisis, created a sense of uncertainty and difficulty which affected also public resources on health care. This occurrence, in a demographic scenario in which the critical situation caused by aging and the reduction of births, becomes evident. In this context many national and regional reforms on health care

systems were addressed to reduce the so considered "redundant, unnecessary" expenditures and costs. While the need for health services for aging and mass chronicity was growing.

It seems that views, regarding health care systems in Italy are linked more to policy implementation and political strategies rather than linked to uncertainties on medical, scientific outcomes.

Thus, the perception of the quality of the healthcare offer is quite high and rely on the very high level of medical professions, while the systems appears to suffer from past cost reduction reforms.

The bill for these reductions was paid during the pandemic emergency where the lack of health personnel and sufficient public emergency services made the reaction to the emergency more difficult.

State of the education system

One of the main factors of social progress and economic development in nowadays societies and digital economies is certainly the question of learning, which is generally investigated at system level, the education system.

Modern, flexible and ready to change systems may create future citizens able to better understand worldwide phenomena connected with major aspects, including public health-care in terms of vaccinations or confidence in the scientific community.

Regarding the education systems, in the comparative analysis, the case of Finland emerges. In this country the state of education is considered extremely good for the 71% of Finnish people, followed - at a discreet distance - by Norway (50%) and Switzerland (48%).

State of education in country nowadays	Extremely bad (0+1+2)	Extremely good (8+9+10)	Average (3+4+5+6+7)
Austria	7,0%	28,8%	64,2%
Belgium	3,9%	34,9%	61,2%
Switzerland	2,1%	48,0%	49,9%
Czechia	3,8%	25,1%	71,1%
Germany	10,2%	20,1%	69,7%
Estonia	4,1%	37,9%	57,9%
Spain	18,1%	9,7%	72,2%
Finland	0,9%	71,2%	27,9%
France	13,8%	10,6%	75,6%
United Kingdom	6,0%	20,0%	73,9%
Hungary	16,5%	11,6%	71,9%
Ireland	3,7%	30,5%	65,9%
Israel	15,2%	17,5%	67,3%
Iceland	6,4%	16,0%	77,7%
Italy	14,3%	12,0%	73,8%
Lithuania	11,6%	13,4%	75,0%
Netherlands	1,6%	26,0%	72,4%
Norway	1,0%	50,1%	49,0%
Poland	8,7%	24,4%	66,9%
Portugal	12,0%	12,2%	75,8%
Russian Federation	17,8%	12,1%	70,1%
Sweden	9,3%	15,5%	75,2%
Slovenia	10,3%	19,7%	70,0%
Totale	8,9%	24,5%	66,7%

FIG. 8 - "PLEASE SAY WHAT YOU THINK OVERALL ABOUT THE STATE OF EDUCATION IN [COUNTRY] NOWADAYS?" [B31] (OWN ELABORATION OF ESS ROUND 8 DATA)

Findings regarding Italy are less brilliant. The state of the system is considered fair (average score) for the 73% of respondents. Also, 14.3% consider the system extremely bad, the 5th worst result among 23 participating countries. This means that significant gaps remain with the EU average. There is a lot to do to improve the system.

Besides, the pandemic has obliged almost all systems in Europe to close schools and universities and using distance learning to support students (13). This had a relevant impact on many countries/systems. In Italy, mainly based on traditional methods, this event created a state of uncertainties and difficulty at the beginning, but it may constitute the basis for further improvements and rethinking on methodologies and innovated approaches.

Far from thinking that face-to-face learning may be substituted by online learning, lacking the essential social interaction, it is therefore possible to consider blended methodologies a further development to be used in traditional pathways, when specific needs are present (in case of long-term ill students, oncological pupils, etc.).

State of the economy

Analysing findings regarding the satisfaction on the state of the economy, it is confirmed the vulnerability of Italy.

Some countries are satisfied with their economy; Norway (44.9%), Switzerland (42.6%), at a discreet distance Germany (36.7), followed by Sweden (23.6%) and Iceland (21.2%).

While those countries reporting a high level of dissatisfaction are: Italy (32.7), Spain (30.5%) and France (29.2%), followed by the Russian Federation (25.5%), Slovenia (25.3%) and Lithuania (20.5%).

The dissatisfaction of the state of economy by Italian respondents is the highest across 23 participating countries.

It is to be considered that the growth of the Italian economy which was strongly hoped in 2016 was still very slow. The risk of recession was close, which could not have easily sustained by the Italian economical context.

The government had to revise its GDP forecasts downward but kept them at an optimistic + 1.2%. The industrial production was also falling. Barclays had estimated Italian economic growth for the whole of 2016 at + 0.7%, cutting it from + 0.8%.

In general, the year did not end well for all of Europe (with the necessary differences) and the following year was also difficult for the European economy and consequently for Italy.

In this uncertain context, worsen by the negotiations between Brussels and the United Kingdom for the exit from the EU; political elections in many European countries; terrorist alarms affecting both political and economic levels (especially the tourism sector); frequent and paralyzing geo-political tensions; it was unlikely that the trust of individuals and companies on economic circuits could be very positive.

How satisfied with present state of economy in country	Extremely dissatisfied (0+1+2)	Extremely satisfied (8+9+10)	Average (3+4+5+6+7)
Austria	7,9%	17,4%	74,7%
Belgium	10,2%	7,2%	82,6%
Switzerland	1,9%	42,6%	55,5%
Czechia	8,6%	16,0%	75,4%
Germany	5,5%	36,7%	57,8%
Estonia	12,5%	10,9%	76,6%
Spain	30,5%	3,6%	65,9%
Finland	10,0%	12,7%	77,3%
France	29,2%	2,0%	68,9%
United Kingdom	11,1%	9,4%	79,5%
Hungary	15,5%	9,4%	75,1%
Ireland	11,2%	9,1%	79,7%
Israel	16,0%	14,1%	69,8%
Iceland	9,0%	21,2%	69,7%
Italy	32,7%	2,6%	64,7%
Lithuania	20,5%	3,6%	76,0%
Netherlands	3,1%	18,3%	78,5%
Norway	2,3%	44,9%	52,8%
Poland	14,0%	10,3%	75,7%
Portugal	21,6%	3,7%	74,6%
Russian Federation	25,5%	3,8%	70,7%
Sweden	6,0%	23,6%	70,4%
Slovenia	25,3%	5,4%	69,3%
Totale	14,7%	13,9%	71,4%

FIG. 9 . "ON THE WHOLE HOW SATISFIED ARE YOU WITH THE PRESENT STATE OF THE ECONOMY IN [COUNTRY]?" [B28] (OWN ELABORATION OF ESS ROUND 8 DATA)

Comparing the political and economic difficulties of the years 2016-17 to the present situation (2020) with the escalation of the unexpected Covid-19 pandemic emergency, the direct connections between economy/labour market and health services responses are evident.

In this context rather uncertain, with forms of discontinuity, the personal ability to correctly understand information and rules, may help to make the right decisions regarding one's health within rapidly changing life contexts.

Trust on political representatives: Parliament and national government

Due to its strong anthropological concept, the issue of 'trust' catalyses a very broad group of human conventional questions, and among these certainly the question of

confidence on political institutions and their representatives. A cross country comparison to analyse if and where the relation inherent in the idea of 'trust' occurs, means to analyse if and whether the political system meets the expectations the system is believed to pursue. In this sense, findings indicate how respondents count on political representative to meet their objectives, thus being responsible of promoting social life, contrast poverty, develop economies national wide.

Trust in country's parliament	No trust at all (0+1+2)	Complete trust (8+9+10)	Average (3+4+5+6+7)
Austria	15,9%	15,0%	69,1%
Belgium	17,5%	7,0%	75,6%
Switzerland	3,9%	29,0%	67,1%
Czechia	23,0%	8,5%	68,5%
Germany	13,8%	18,7%	67,5%
Estonia	19,9%	11,8%	68,3%
Spain	30,3%	7,7%	62,0%
Finland	10,8%	23,9%	65,3%
France	24,9%	6,9%	68,2%
United Kingdom	18,0%	12,1%	70,0%
Hungary	23,1%	11,0%	65,9%
Ireland	19,8%	8,5%	71,7%
Israel	30,1%	10,4%	59,5%
Iceland	14,5%	10,4%	75,1%
Italy	42,7%	4,4%	52,9%
Lithuania	29,4%	5,3%	65,2%
Netherlands	8,5%	12,2%	79,3%
Norway	4,7%	41,3%	54,0%
Poland	40,3%	7,5%	52,2%
Portugal	30,0%	8,9%	61,1%
Russian Federation	26,3%	12,5%	61,2%
Sweden	8,9%	27,7%	63,4%
Slovenia	38,5%	4,7%	56,8%
Totale	22,0%	12,9%	65,1%

FIG. 10 - "HOW MUCH YOU PERSONALLY TRUST …[COUNTRY]'S PARLIAMENT? [B6] (OWN ELABORATION OF ESS ROUND 8 DATA)

Italians seem to be marked by a certain detachment from their political representatives, it is evident the mistrust in the Parliament, not trusted at all by 42.7% of respondents and only 4.4% had a complete trust in the legislative institution. It is the country with the

lowest level of confidence in the legislative body. Similar results only in Poland (40.3%) and Slovenia (38.5%), followed by Spain (30.3%), Israel (30.1%) and Portugal (30%).

While Norway has the opposite situation (complete trust: 41.3% - no trust at all 4.7%), followed by Switzerland (29%) and Sweden (27.7%).

Findings are not dissimilar when analysing satisfaction of the action of national governments.

As a difference with trust in Parliament where several countries have reported higher trust in their legislative body, in case of the national government less countries are extremely satisfied regarding ruling institutions.

Only Switzerland has very positive results (34.8%), followed at a discreet distance by Norway (17.5).

How satisfied with the national government	Extremely dissatisfied (0+1+2)	Extremely satisfied (8+9+10)	Average (3+4+5+6+7)
Austria	20,8%	11,4%	67,8%
Belgium	17,6%	4,7%	77,7%
Switzerland	2,7%	34,8%	62,5%
Czechia	15,7%	6,4%	77,9%
Germany	13,6%	10,6%	75,8%
Estonia	24,6%	6,1%	69,3%
Spain	40,1%	4,9%	55,1%
Finland	19,9%	11,5%	68,6%
France	38,4%	2,6%	59,1%
United Kingdom	17,5%	10,7%	71,8%
Hungary	22,7%	11,5%	65,8%
Ireland	18,5%	7,0%	74,5%
Israel	28,9%	10,6%	60,5%
Iceland	20,4%	10,6%	68,9%
Italy	42,9%	2,7%	54,5%
Lithuania	22,0%	4,6%	73,4%
Netherlands	7,9%	8,0%	84,1%
Norway	8,5%	17,5%	74,0%
Poland	32,6%	13,8%	53,6%
Portugal	14,9%	13,7%	71,5%
Russian Federation	16,5%	13,2%	70,3%
Sweden	13,0%	6,8%	80,2%
Slovenia	37,8%	3,9%	58,3%
Totale	22,1%	9,4%	68,5%

FIG. 11 - "THINKING ABOUT THE [COUNTRY] GOVERNMENT, HOW SATISFIED ARE YOU WITH THE WAY IT IS DOING ITS JOB? [B29] (OWN ELABORATION OF ESS ROUND 8 DATA)

Italy confirmed a very low satisfaction in its institutions (42.9%), followed by Spain (40%), France (38.4%), Slovenia (37.8%). It registers actually the less positive level of satisfaction (42% of Italian people are extremely dissatisfied) and the lowest satisfaction rate (2.7%), confirming the weakness of the system.

This very low trust of citizens on political institutions could be considered a critical area which may threaten the propensity of individuals and groups to process, evaluate and implement the information available to make public health decisions useful for the community (public health literacy).

Conclusions and discussions

This concluding section is intended to identify key aspects or critical issues to open further discussions on these particularly relevant areas.

There is always an interest in understanding to what extent public trusts science and the scientific community, in connection with vaccines, climate change, and technological progress. These relevant differences in opinions, attitudes and trust may support policy makers in planning priorities and strategies and prevent from unsuccessful policies.

There is great scientific evidence that vaccination may be a defence against deadly and debilitating infections. But this collective social benefit in a high vaccination coverage has further values. As the Covid-19 pandemic showed, a worldwide contagion may also impact on the economy and the labour market, increasing poverty and social, economic hardship.

In Italy, the complexity of the health systems is also connected to socioeconomic difficulties, such as high unemployed rate and a rigid labour market. Levels of (health) literacy and cultural and education developments may be further exploited.

A first and fundamental critical area is represented by the very low trust of citizens on political institutions and the reduced transparency of relations between institutions and governance. The responsibility of political representatives in this drift of trust, over the years, is evident. The risk is to threaten the propensity of individuals and groups to process, evaluate and implement public health literacy.

Another aspect to be considered is the importance of communication. There are so many scientists and experts who are trying to introduce correct information and deviate citizens from being subject to misinformation, by answering citizens' questions and trying to unmask fake news. A relation of trust is being consolidated, based on scientific correctness and mutual empathy. The scientific community is communicating better than in the past with the referring population, and this improved situation will open to a long and lasting affiliation.

Besides, one of the lessons learned during the Covid-19 pandemic emergency is the trust in the scientific community, in its methods, research and competence. This will lead to obtain reliable answers from experts to community needs, such as the climate change, the technological progress and digital developments.

Considering that our healthcare systems are becoming more and more complex as they have to face larger share of responsibility, the ability to understand and process complex information is becoming increasingly important and citizens need to learn how to navigate

their way to health. The consequences of inadequate literacy and literacy in health environment may lead to support inadequate strategies or policies.

In this context, systems, organizations, political decisions adopted at national, regional and local level (with different levels of competence on the health system) must be oriented to make it easier for citizens to navigate, understand and use information and services concerning health. In this case we can talk about *health-literate systems,* because the value of health literacy is recognized and integrated into the health care processes, organizational models and communication practices.

Note

(1) ESS web-site: https://www.europeansocialsurvey.org/ while Italy web page (in Italian language) is available at: https://www.europeansocialsurvey.org/about/country/italy/
(2) NatCen Social research web site: https://natcen.ac.uk/our-research/research/european-social-survey/
(3) The Istituto Nazionale per l'Analisi delle Politiche Pubbliche (INAPP) web site is: https://www.inapp.org/. The ESS-Inapp section: https://www.inapp.org/it/dati/ESSReferences
(4) The decree-law 7 June 2017, n. 73, containing urgent provisions on vaccine prevention, it was later converted into the law n. 119, 31 July 2017.
(5) It was even introduced a new word to denominate this movement; the word "antivax" is actually a neologism included in the Italian language in 2017 (https://www.treccani.it/vocabolario/antivax_%28Neologismi%29/).
(6) The 'herd immunity' theory states that the achievement of a significant percentage of vaccination within a population (generally 95%) allows the drastic reduction of the circulation, also providing coverage to those individuals whom for various reasons (immunocompromise, oncological pathologies, life-saving therapies, etc.) cannot be vaccinated.
(7) Regions in Italy are competent for health services.
(8) https://www.oecd.org/skills/piaac/
(9) The survey is every ten years, thus in 2021-22 a second cycle of PIAAC survey will be held.
(10) In PIAAC low-skilled are those achieving a Level below 3 in a 5-level scale, while high skilled respondents are those ranked 4 and 5 in the scale.
(11) Questions in the original language:
- I vaccini logorano il sistema immunitario e lo espongono a diverse malattie [X1]
- In tema di vaccini ci si può fidare delle raccomandazioni della comunità scientifica [X2]
- Le case farmaceutiche ostacolano cure efficaci per guarire malattie gravi perché temono di perdere profitti [X3]

(12) In square brackets the identification of the question in the questionnaire. In this case it is the section X, question 1. This classification applies to all quotations.
(13) For further information: Impact of Covid-19 on closure of education systems in Europe: https://eacea.ec.europa.eu/national-policies/eurydice/content/impact-covid-19-closure-education-systems-europe_en. http://eurydice.indire.it/wp-content/uploads/2020/04/coronavirus_didatticaadistanzainUE_aggiornato_27aprile_DEF.pdf

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