



Waiting time information in the Italian NHS: A citizen perspective

Sabina De Rosis^a, Elisa Guidotti^{a,*}, Sara Zuccarino^a, Giulia Venturi^b, Francesca Ferré^a

^a Management and Health Laboratory, Institute of Management and Department EMbeDS, Scuola Superiore Sant'Anna, Pisa, Italy

^b Italian Natural Language Processing Laboratory (ItaliaNLP Lab), Institute of Computational Linguistics "A. Zampolli" (ILC-CNR), Pisa, Italy

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ABSTRACT

Public involvement in the management and communication of waiting times is known to support initiatives to reduce waiting times, as well as increase fairness and promote transparency and accountability. In order to improve transparency and communication to citizens, Italy recently updated the National Regulatory Plan for Waiting Lists (2019–2021), which calls for the disclosure of waiting time information on healthcare provider webpages. This study analyses waiting time information for outpatient visits and digital services available on the institutional website pages of 144 public healthcare organisations in nine regions and two autonomous provinces of Italy. Web pages were analysed both in terms of the available information/services, using a grid, and in terms of the quality of the text using an advanced readability assessment tool (READ-IT). This information was complemented and validated by regional healthcare key informants during research-specific workshops. Waiting time information disclosure, digital services and text readability varied both within and between the regional healthcare systems and organisations. The types and characteristics of waiting time information and statistics vary considerably with a negative impact on their use for benchmarking and their readability and usability for booking purposes. Overall, communication weaknesses due to low harmonization and clarity of information can undermine efforts in effectively informing and involving the public through online waiting time data disclosure.

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1. Introduction

In several OECD countries, waiting times (WTs) are a major policy issue [1] and one of the main concerns for the general public [2]. Several countries have implemented national strategies to address WTs, both on the supply and demand sides [3].

Public involvement in WT management and communication support initiatives to reduce WTs, increase fairness and promote transparency and accountability [4–6]. The public wants to be engaged and informed about how WTs are managed [6,7]. Patients that receive accurate information on WTs and the reasons for waiting, appear to maintain a sense of control during the wait (including reduced anxiety) and this tends to increase their willingness to wait [8–10]. The precision and validity of such data and their contextualization is crucial in generating value for patients [11]. Many countries are thus investing heavily in creating systems to make information on WTs available, using websites for public disclosure. In order to improve accountability, transparency and communication to citizens, the National Healthcare System (NHS)

in Italy mandated the disclosure of WT information on healthcare providers' webpages for specific outpatient visits, diagnostic services and elective procedures. These recommendations are part of the National Regulatory Plan for Waiting Lists (National Plan), the strategic document defining the framework for WT management in Italy. The latest National Plan was issued in 2019 and stressed the need to guarantee a maximum WT for selected outpatient and elective surgeries, while improving system efficiency and enhancing access and information to citizens (see Box 1 for the details of the three-year National Plan 2019–2021). The document also reiterates the recommendations already outlined in the previous National Plan.

The above are umbrella measures promoted across all Italian regional healthcare systems. Each regional healthcare system is also required to issue a regional WT plan detailing local measures and requirements for achieving the goals of the National Plan.

In most Italian regional healthcare systems, patient access for selected healthcare services is enhanced by using priority levels for managing waiting lists, re-engineering booking processes (e.g. by creating unified booking centres) and improving available information to citizens about WT. However, current policies - including the implementation of the national legislation on publicly reporting of WTs - vary among regions, with some being very active and

* Corresponding author at: Scuola Superiore Sant'Anna, Piazza Martiri della Libertà 33, 56127, Pisa Italy.

E-mail address: elisa.guidotti@santannapisa.it (E. Guidotti).

Table 1
Number of websites analysed by region and type of organisation.

Region/ Autonomous province (AP)	Regional and LHAs ^a websites	Public hospital Institutions ^b websites	Former Organisations ^c still active websites	Total
Apulia	7	4		11
Basilicata	3	2		5
Bolzano (AP)	2			2
Friuli Venezia Giulia	6	2		8
Liguria	6	4		10
Lombardy	9	33		42
Marche	5	3	8	16
Trento (AP)	2			2
Tuscany	4	6	7	17
Umbria	3	2		5
Veneto	10	3	13	26
Total	57	59	28	144

^a LHAs and two LHAs with an academic profile operating in Friuli Venezia Giulia.

^b Public hospital enterprises, THs and IRCCSs.

^c Public healthcare organisations with still active website after mergers.

others often lagging behind. Regional autonomy in healthcare services has led to the adoption of different approaches for reporting WT performance information. To date, there is a lack of systematic comparative assessments of the information provided between and within regions and healthcare organisations.

Another key aspect that is missing is the assessment of WT information quality in order to understand whether the WT data available online are actually useful and readily usable for citizens. Usefulness relates to the satisfaction of information needs based on users' expectations, while information is usable if users effectively incorporate specific information into a decision process and thus is perceived as salient, legitimate and credible [12]. In disclosing public performance information, it is important to ensure that information that healthcare providers hope is useful will actually help citizens in their decision-making [13].

Current evidence highlights that public disclosure of information impacts on both providers and population behaviours, but not in a uniform fashion [14]. In the healthcare sector performance information affects managers' and professionals' behaviour [15–17], but to a less extent the public's decision-making [18,19].

Online public disclosure of WTs answers the need for public accountability. However, if measurement systems are not based on how the measurements will be actually used, the performance information that comes out of the process has a high chance of being not used or used inappropriately. Performance information also addresses citizens in their roles as customers of public services, particularly when governments create yardstick competition between healthcare providers and thus users can “shop around” [13]. Information on WTs should thus be easy to find, readable and usable by citizen for decisions such as scheduling selected outpatient and elective services. Online booking should also be provided [20–22].

Finally, readability is key to performance measurement information. Providing understandable information (e.g. explanations of tables and graphs) is crucial to prevent misinterpretations of WT data, misleading conclusions and consequent distrust in public institutions [4,6,11,23]. For instance, websites should also be readable by those with low literacy skills. Research on the readability of health-related information in Italy, such as informed consents, has shown that the quality of written information is still low [24].

This paper aims to describe (i) variation both within and between regional healthcare systems in Italy with regard to online WT information for outpatient visits and understand the level of usefulness in its current format, (ii) the readability of such information through the *readability analysis* of online information; and (iii) the usability of WT public reporting for citizens. The analy-

sis was carried out by reviewing the institutional website pages of public healthcare organisations.

The paper is structured as follows: Section 2 presents the material and methods; the results of the analysis are then presented in Section 3. Lastly, the discussion, highlighting insights and suggestions for further research, is reported in Section 4.

2. Materials and methods

2.1. Study setting

The Italian healthcare system is a universal decentralised Beveridge system that comprises nineteen regions and two autonomous provinces (APs). Since the early 1990s, legislative reforms have gradually transferred political, administrative, fiscal and financial responsibilities regarding the provision of healthcare from the national government to the regions and APs. The devolution policies led the regions and APs to develop different organisational and funding models [25] and differences in the quality of care provided, the level of healthcare expenditure and financial performance can be observed. The system is currently organised and governed at three levels: national, regional and local [26]. The central government has a stewardship role: it determines the core health benefits to be uniformly granted across Italy and allocates the financial resources to the regional governments through general taxation. These regional governments oversee, organize and deliver primary, secondary and tertiary healthcare services, as well as preventive and health promotion services. They define their own regional health plans, coordinate the strategies of the regions, allocate the budget within their systems and monitor quality, appropriateness and efficiency of the services provided. The local level ensures the provision of primary, secondary and tertiary healthcare services, as well as the preventive and health promotion services through:

- *local health authorities 'LHAs'* (geographically based organisations, responsible for delivering public health services, community healthcare services and primary care directly, while secondary and specialist care through directly managed facilities or by outsourcing to public hospital institutions or private accredited providers);
- *public hospital institutions* (which often cooperate with Medical Schools and work as Teaching Hospitals);
- *private accredited providers*.

The system allows the citizens to choose the healthcare provider anywhere in Italy, irrespective of where a citizen is resident.

Table 2
Number and responsibilities of the experts engaged in the two meetings and the workshop on communication and digital services.

Domain of expertise	Number of participants (n)		
	First meeting November 2018, Pisa	Workshop March 2019, Pisa	Second meeting May 2019, Florence
Clinical expertise	1	2	1
Management	6	10	5
Performance and information flows	18	26	16
Total	25	38	22

Our study focuses on the analysis of the type and quality of WT information gathered from the institutional websites of the local level public healthcare organisations and the regional website. Specifically, the data and analysis refer to the nine regions and the two APs that have adopted the Italian Regional Performance Evaluation System (IRPES) (Table 1).

The IRPES measures and evaluates the multiple healthcare performance of public healthcare organisations, from financial viability to quality and patient satisfaction, through a systematic and publicly-disclosed benchmarking system [27]. Since 2008, membership of the IRPES has been on a voluntary basis, offering a long-term benchmarking opportunity. Through regular meetings and workshops, the IRPES provides opportunities for research collaboration on specific topics [28] and exchange with key informants from the regions.

Our analysis includes 144 websites of public healthcare organisations: namely regions, LHAs, public hospital enterprises, teaching hospitals (THs) and national public hospitals for scientific research (Istituti di Ricovero e Cura a Carattere Scientifico - IRCCS, in Italian).

The analysis also includes the public healthcare organisations that still have a website even though they were merged with other healthcare organisations during the recent reorganisation of the regional healthcare system (Table 1).

In addition, we analysed the healthcare/WT regional portals of the following regions: Apulia, Basilicata, Friuli Venezia Giulia, Liguria, Lombardy, Umbria, and Veneto.

Data collection and analysis focused on the WT information for specialist visits covered by the current National Plan, as well as the digital booking and payment services for outpatient visits. We likewise investigated whether and how regions followed the Guidelines on Digital Service Design for the Public Administration, published by the Agency for Digital Italy (Agenzia per l'Italia Digitale - AgID, in Italian) [29].

Three researchers independently explored the websites following a grid designed on the basis of the National Plan recommendations and the AgID guidelines. Exploiting a user/citizen perspective, data were collected by searching for information on the websites using the grid from September to December 2018.

Any disagreements in the grid application for data collection were debated among all authors until a consensus was reached. If the authors had any doubts when examining the collected data, a second round analysis of the website was run.

The grid was structured into three sections: website adaptability, WT information, and digital services (see the Appendix for details).

The section on website adaptability assesses both the quality of browsing, irrespectively of the device used and the responsiveness of the web pages (RWD) [30]. The web inspector functionality of browsers, such as Google Chrome, was used for the RWD analysis.

The section on WT information was designed to assess:

- the presence/absence of WT data and related information;
- the location of such information on the website;
- whether the access to WT information was open to the public or restricted to some groups;

- whether WTs for specialist visits listed in the National Plan were disclosed;
- how WTs were measured and disclosed: the measure adopted (e.g. mean WT), whether the WTs were retrospective or prospective, the update frequency, the aggregation of data (e.g. healthcare districts), the setting of care (public or not);
- whether WT consultation allowed for simultaneous e-booking for outpatient services;
- whether the healthcare organisations also offered a platform and/or mobile applications (APPs) to search for WT information.

The section on digital services assessed the offering of e-booking and e-payments for specialist visits, in terms of availability and mode of operation.

During data collection, the online texts regarding WTs were collected to analyse their quality using READ-IT (here called Global READ-IT index [31]) and GulpEase [32].

The Global READ-IT index was the first readability assessment tool available for the Italian language based on Natural Language Processing (NLP) techniques and machine learning algorithms. It assesses the readability of documents by combining traditional raw text features with lexical, morpho-syntactic and syntactic information. The index ranges between 0 and 100, the easier the readability, the lower the score.

GulpEase was the first index developed for the Italian language based on traditional raw text features (i.e. sentence and word length). It ranges between 0 and 100 - the easier the readability, the higher the score - with the threshold of 80 highlighting a text readable by less educated people (primary school), 60 by low-medium educated people (secondary school), and 40 by medium-high educated people (high school).

While the GulpEase index is a proxy for the lexical and syntactic complexity of a text, the Global READ-IT index captures different aspects of linguistic complexity, i.e. lexical (such as measures of lexical richness), morpho-syntactic features (such as lexical density and verbal mood) and syntactic aspects (such as ordering patterns of syntactic elements, structure of verbal predicates and subordinate features).

The lexical complexity of texts was also assessed using a vocabulary-based index, which refers to the distribution of the words contained in the Basic Italian Vocabulary (BIV), including words highly familiar to native Italian speakers [33]. This index is calculated as a percentage of adopted words from the BIV, with percentages higher than 80 generally signalling a text with a high level of readability.

The regional score for readability was given by the mean value obtained by the organisations in each region.

After data collection and the preliminary analysis, two meetings and a workshop were organised to discuss and validate the results with regional representatives and local professionals, as experts of the domain and/or informed on specific features of WTs and digital services (Table 2). Key informants were identified from the IRPES network of experts. During the meetings, collected data were discussed and interpreted and new indicators on communication and digital services were endorsed by IRPES Network.

Box 1

Main features of the National Regulatory Plan for Waiting Lists 2019–2021.

GOALS

- Maximum WT guarantee for selected outpatient visits (n=14), outpatient diagnostics (n=52), and elective surgeries (n=18). Healthcare services were selected considering areas where timeliness is key (oncology, cardiovascular), or demand is high (specialist visits), or with high technological complexity (diagnostics), or where there is still variability in access between regions.
- Implementation of single booking centres and improvement of online booking systems.
- Guarantee of booking services without interruption to work schedule.
- Guarantee of full production capacity of medical technologies available (e.g. MRI scan).
- Improvement of WT public disclosure at regional and local levels (e.g. through websites).

OVERALL MEASURES FOR ACHIEVING STATED GOALS

- Use of prioritization criteria to manage WTs based on clinical criteria and professional judgement. Four levels of priority were identified: urgent, short time, deferrable, and elective service.
- Clear identification of first access and follow-up patients and use of dedicated waiting lists.
- Improvement of recall systems to prevent “no show” and introduction of financial penalties for “no show”.
- Use of performance indicators for waiting list and waiting time monitoring at a national level.
- Creation of the National Observatory on Waiting Lists for supporting regions and autonomous provinces in implementing and monitoring the effective application of the National Plan provisions.

The above are umbrella measures promoted across all Italian regional healthcare systems. Each regional healthcare system is also required to issue a regional WT plan detailing local measures and requirements for achieving the goals of the National Plan.

3. Results

Variability within and between regions/APs was found in WT information disclosure, online service availability and text readability. The websites analysed showed differences in terms of breadth and depth of WT information, usability of such information for booking purposes and their readability.

3.1. Website overview and adaptability

Each region/AP has an institutional website with a healthcare section. Seven regions provided citizens with dedicated portals on healthcare/WTs (e.g. Veneto [34]).

At the local level, all LHAs have developed their own institutional website. However, website layout (i.e. data organisation and location on the website) and navigational design differed. Some regions (e.g. Tuscany) adopted a common regional layout and design, thus facilitating navigation across different organisational websites. Other regions - such as Basilicata - opted for a less homogeneous approach.

Website adaptability analysis showed that all the websites are adaptive or at least present a responsive web design. Citizens are thus able to consult all the websites using both a computer and a mobile device.

3.2. Waiting times

More than 96 % of the websites presented a section dedicated to WTs for appointments with specialists, with descriptive information on the WTs. Four organisations displayed WT data in tables with no explanation.

More than half of the organisations (56 %) showed WTs for appointments with specialists in an online section devoted to bureaucratic issues, called “Transparent Administration” in compliance with Italian regulations on transparency. Another group of organisations (30 %) showed WT information on their home

page. The others showed WTs in the citizen/user section of the webpage. The analysis revealed that about 32 % of the healthcare organisations placed WT information for appointments with specialists outside their website, either on an inter-organisational or regional pages. The latter approach was adopted by 12 out of 16 public healthcare organisations in the Marche [35] and all healthcare organisations in Friuli Venezia Giulia [36].

WT information was accessible for all users, with few exceptions.

Around 30 % of the organisations provided WTs without detailing data in accordance with the National Plan priority codes. Around one-third displayed WTs only by three priority codes: ‘Short time’, ‘Deferrable’ and ‘Elective’. Only about 22 % disclosed WTs using the four priority codes. A smaller percentage (13 %) presented WTs by priority codes different from those listed in the National Plan. The remaining organisations uploaded WT data differentiated by some combinations of the National Plan priority codes only.

At least two distinct types of WTs based on two information flows were identified: 1) “completed waits”, i.e. a retrospective look at patients who had already received care, 2) “expected waiting time”, i.e. a prospective look at the availability of care for new patients. However, the analysis showed that the 64 % of public healthcare organisations did not include the source of data used to measure WTs.

WT statistics were displayed in different ways and often more than one measure was provided. Mean WT was the most frequently displayed measure (almost 50 % of organisations), followed by the percentage of visits falling within the required standard maximum WT (nearly 39 % of organisations) and by the minimum WT (about 19 % of cases).

Other ways of measuring WTs included the maximum WT (around 15 % of cases) and first date available for an appointment with a specific specialist (almost 12 % of cases). More than 30 % of organisations showed WT data according to other measures. For example, in Friuli Venezia Giulia WTs were disclosed as “estimated waiting times”, calculated on the basis of the third available slot found with a simulation based on telephone calls through the booking centre. However, in more than 15 % of cases WT statistics were provided without any explanation about the measure adopted.

The distribution of measures used by public healthcare organisations to monitor WTs is shown in Fig. 1.

WT statistics were updated with different frequencies. The majority of websites updated data every month (24 %) or every quarter (18 %). In a few cases the statistics were revised every year (7 %) or every six months (8 %). Less than 20 % of organisations updated the statistics every week or every day, making WTs available in real-time. A quarter of the organisations did not state the frequency of updates.

The study revealed that WT data were provided according to different levels of aggregation. The minimum level was the individual provider (e.g. laboratory services) and about 50 % of organisations showed WT information aggregated at this level. Approximately 32 % of cases provided WT data for the organisation as a whole (e.g. TH, LHA). A total of 16 % displayed WT data by local healthcare district or by *Area Vasta* (i.e. the entity appointed to coordinate LHAs and THs actions in a geographical area). A small percentage of healthcare organisations disclosed WTs aggregated at the regional level or by Directly Managed Hospital.

WTs were always available for outpatient specialist care provided by public practices, but rarely (4 %) for medical staff working privately within a public hospital, even though the National Plan requires healthcare institutions to provide the information for both practices. Eleven per cent of the institutions reported that they only disclosed public practice WTs. Nevertheless, this information was generally not explicit on websites (84 %).

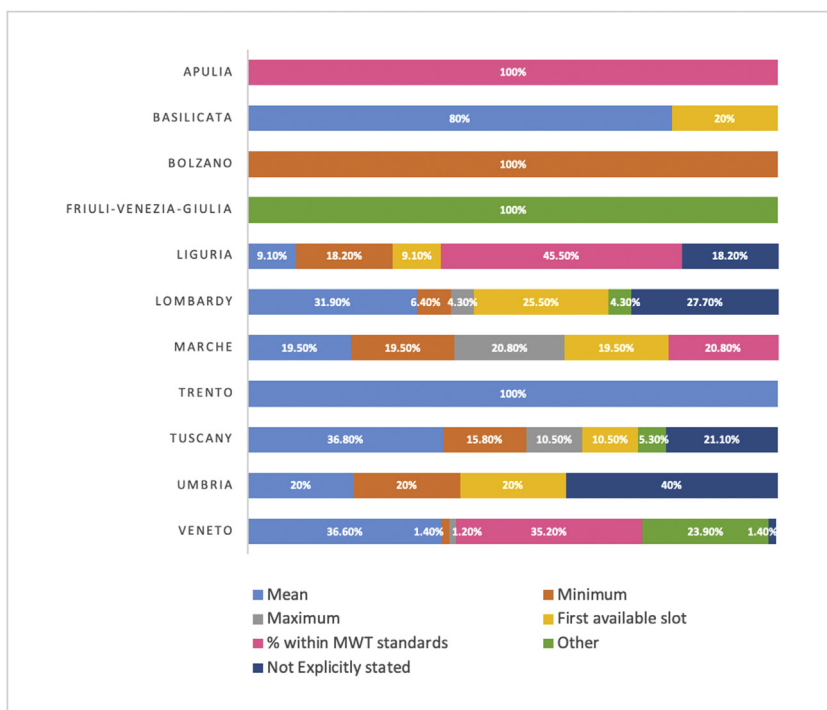


Fig. 1. Waiting time statistics in nine regions and two autonomous provinces of Italy, percentage of organisations showing specific WT type in each region.

Approximately 66 % of the organisations did not clearly specify whether WT data referred to public organisations only or included private accredited institutions. WT disclosure for appointments with specialists offered by private accredited providers was seldom displayed (26 % of cases). Only 7 % of the websites declared whether WT information referred exclusively to public providers.

3.3. Digital services

Around 63 % of the organisations enabled users to consult WTs and simultaneously e-booking for appointments with specialists. In all these cases, a synchronous/real-time service for e-booking was available. Another 5 % of the healthcare organisations allowed citizens to book a visit in an asynchronous way (i.e. the users send an email or fill-in a form on the website and they are later contacted by an operator to book the appointment), without the possibility to consult the WTs all at once.

About 21 % of the e-booking services were provided by the individual organisation, while 50 % were managed by the regions. The authorities in Marche did not provide an e-booking service and only a few organisations in Liguria and Tuscany provided this service at the time of our study. Apulia, Basilicata, Bolzano, Friuli Venezia Giulia, Lombardy, Trento and Umbria offered real-time e-booking for appointments with specialist for almost all the public providers.

We also checked whether appointments with specialists could be paid for online. Ten out of the eleven regions/APs implemented online payment for this service. Within these ten regions, most of the organisations offered this digital service, except for a few cases.

A total of 75 % of the organisations were found to have APPs, offering a wide range of different services. Around 20 % of organisations allowed users to pay for outpatient care via an APP. In more than 40 % of cases, e-booking for appointments with a specialist was available via an APP, for example Apulia (*PugliaSalute*) and Lombardy (*Salutile*) APPs. On average, only 50 % of the 14 outpatient appointments with specialists listed in the National Plan were available for e-booking using an APP.

Specific indicators on the digitalisation of booking and paying for healthcare services were integrated into the IRPES.

3.4. Readability analysis

The WT texts were very difficult to read both at lexical and syntactic levels. To provide an idea about the linguistic competences needed to understand the texts, we used the GulpEase index as a measure designed to test the readability with respect to the user educational level (see Methods). The texts issued by six regions were hard to read for users with primary education, while those issued by the other regions/APs were difficult even for citizens with a lower middle school diploma. The GulpEase index ranges from 0 (low readability) to 100 (high readability) and the WT texts scores were between 50 and 74 points (Fig. 2.B), so their readability is “medium”. However, we expected the published texts - which are supposed to be understood by a wide variety of readers - to have an optimal level of readability, namely a score higher than 80, the easy-to-read threshold for people with a primary education. We adopted the Global READ-IT index, a readability-index ranging from 100 (high difficulty) to 0 (low difficulty), to gather more detailed information on the linguistic complexity. For the analysed texts, the Global READ-IT scores ranged from 98 to 70 points (Fig. 2.A). Sixty-three per cent of the scores ranged in between 98 and 92 points.

These findings indicated that the texts show complex linguistic characteristics, such as multiple subclauses, complex verbal predicate structures, non-canonical orders of sentence constituents, and embedded sequences of subordinate clauses. With respect to raw text features, the readability of the WT texts varied not only between regions but also within them. For instance, the organisations in Lombardy obtained scores ranging from 99.59 to 1.78 points for the Global READ-IT index, since the distribution of linguistic characteristics affecting readability varies greatly among texts. The analysis pointed out the texts are quite hard to read. Concerning the lexical aspects, the use of BIV words in the texts was similar across regions, ranging between 60 % and 68 % (Fig. 2.C).

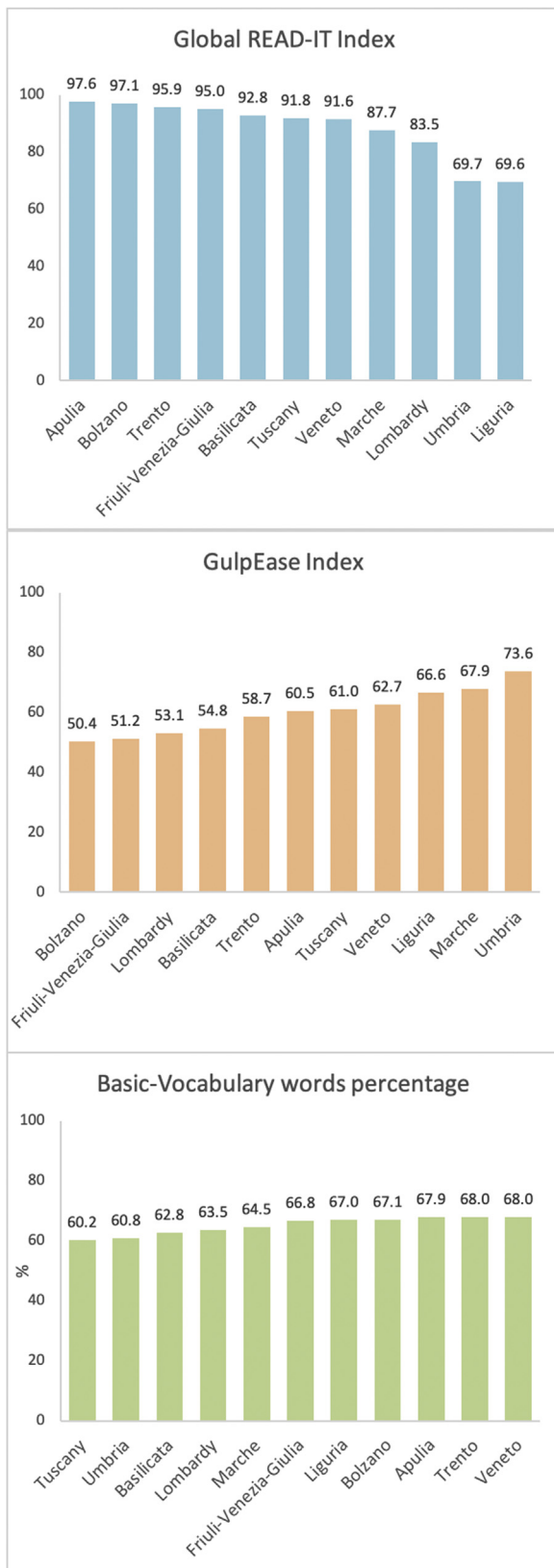


Fig. 2. Global READ-IT index (A), GulpEase index (B), Percentage of Basic-Vocabulary words (C) for WT information texts.

During the meeting with the regional key informants, new readability indicators on the WT website texts were discussed and adopted into the IRPES, namely:

- Global READ-IT index;
- GulpEase index;
- Percentage of BIV words.

4. Discussion

While the public disclosure of healthcare performance data impacts on healthcare systems by affecting the behaviour of managers and professionals often through reputational pressure [15–17], evidence suggests that citizens rarely use the publicly available data, and, when they do, it has a limited impact on their decision-making [18,19].

Although Italian patients can choose healthcare providers, we cannot normatively argue that publicly accessible and easy-to-understand WT information changes citizens' behaviour and should be prescriptively considered as a tool for citizens' empowerment or choice. Lay people should be able to interpret such information and act on it [37]. This means, for instance, that patients should act as consumers, though this aspect has not been found by the literature on public reporting [18,38]. Nevertheless, citizens do show high interest in WT data [6,7] and informing patients on WTs can positively affect patient behaviour in better managing their care pathway [6–8].

Our study highlights variability both within and between regions/APs in Italy with regard to online WT information for outpatient visits, the readability of the webpage texts and the availability of concurrent digital services that citizens expect to find while consulting waiting times for selected outpatient services. This heterogeneity can be a hurdle for citizens [39].

Overall, our findings show there is room for improving the public reporting of WT data in several aspects.

First, only one third of the regions investigated in our study have WT information on their home page, while most regions use a website section devoted to bureaucratic issues underlying the mere administrative nature of information reporting. The effectiveness of such communication style is not high in terms of citizen awareness [6]. In this view, the use of performance information produces a distortion because what is actually valued is the pursuit of the target (WT public disclosure) rather than the intended effects (accountability towards citizens to improve service delivery). This can leave the organization without a stimulus for improvement, i.e. “hitting the target but missing the point” [16,40]. We suggest that online WT reporting should be easily available on the homepage - since the public interest is high - and should be linked to other relevant online sections about the use of such information.

Second, with regard to the type of WT information, the websites show a low level of homogeneity in terms of statistics, frequency of updates and data aggregation, often suggesting weaknesses in the accuracy and reliability of the data. Therefore, citizens cannot easily use WT data to compare providers [11], monitor WT trends and get information on the expected access time for selected care visits or treatments.

These findings highlight that the harmonization of WT data needs to be improved together with the precision of data. This is particularly important when data is used for external reporting across organizations, to allow benchmarking. Indeed, accountability is tied to measurable, relevant and comparable indicators of quality [16].

Third, the WTs shown online are often not relevant to patients, since they report statistics such as the percentage of visits provided within the required standards, instead of measuring the actual WT (i.e. duration), which is what matters for patients [1]. These administrative reporting formats are not very helpful in communicating with citizens. WTs need to be made interesting, valid and useful to patients, also by linking WTs with other significant aspects of care, for example by providing real-time online booking [11]. Currently, the majority of Italian regions or healthcare organisations we reviewed, enable users to consult WTs when booking an appointment with a specialist in real time. Although this digital service is not built to provide a comprehensive picture of WT data, it enables patients to access and use WT information for a decision process. Indeed, online booking (i) reports WT data in an easy format, usually with the first date available; (ii) provides timely access to WTs and (iii) is directly linked to the option of booking an appointment.

Although we cannot argue that the combination of easy-to-understand, up-to-date WT data and online booking systems can really empower citizens, it can enable them to ‘act’ using WT information as one of the criteria in making a choice. For this reason, we suggest that providing citizens with clear, relevant and understandable WT information, while giving them the opportunity to choose among providers for appointments, can make citizens more informed and active.

Fourth, our study highlights that readability is a key measure for the efficacy of public reporting [41,42]. The readability analysis shows that online information about WTs is difficult to understand for those with low and medium levels of education, thus raising equity issues in terms of access and use of online information. Besides constructions of sentences related to linguistic complexity, the negative results of readability can be partially explained by the absence of a healthcare glossary for measuring the text readability (i.e. specific terms, most recurrent words), thus overestimating the difficulty of the written narratives at the lexical level. In the light of these findings, we suggest a thorough revision of texts to improve the readability, envisaging a collaborative work between specialist writers and practitioners who stay in direct contact with lay people, so to fit health-sector specific terms with cultural and linguistic aspects of the average citizen.

Overall, our findings reveal that the public disclosure of WTs is variable and fragmented in Italy. This suggests that what the National Plan recommended in terms of online public disclosure of WTs has not yet been turned into a useful and usable instrument for citizens. Some of the limitations could be overcome by adopting collaborative and participatory processes, involving regional/local healthcare organizations and inviting citizens to participate in defining a reporting format. A set of performance indicators on WTs is already used at national level to evaluate the essential levels of care, and regional ad-hoc analyses to identify WT determinants and geographical variation are available [43,44]. Nevertheless, these performance indicators are not appropriate for a public disclosure of WT information, from the patient perspective. Proper WT indicators should be shared and endorsed by citizens, practitioners and managers.

The publication of performance information should play a key role in supporting healthcare system improvement through benchmarking and reputation [45]. Nonetheless, there are several instances where public disclosure generates pressure on organizations, which in some cases may become dysfunctional. For example, the threat of being named-and-shamed can cause reputational concerns among the providers and - if well designed - can improve the performance of weak organizations differently from the approaches based on command-and-control [16,41,46–49]. However, other risks arise when introducing naming-and-shaming

reforms combined with sanctions and rewards using the traditional top-down approaches.

This is well documented by the NHS in England which attempted to reduce WTs through a naming-and-shaming regime combined with targets-and-terror [15]. First, this approach does not stimulate excellence, above all for providers that have an acceptable performance: there is no shame in staying in the middle [15,50]. Second, the top-down approach could lead to a decrease in responsibility and engagement of healthcare providers at the local level [15]. Third, the hierarchical approach often does not allow flexibility, and issues can arise when policies are implemented at a local level without any adjustment to local features.

A social process of collegial benchmark competition, which fosters the identification of best practices and continuous peer learning, should be embraced when publicly reporting performance information, especially in the healthcare sector where it has been proven to improve performance. This is particularly true when the rewards have reputational effects through the public reporting of performance benchmarking (a sort of ‘reputational competition’) and are designed for high performers only, without a ranking system with performance reported according to multiple criteria [15,51]. We encourage policy makers to design WT reporting systems grounded on benchmarking to exploit the reputational drivers, which have already been successful in Italy.

For example, having a national web-platform can allow public benchmarking among providers at different levels. The Ministry of Health could exploit the permanent National Observatory on Waiting Lists to provide a common web-platform where the regions/organizations can homogeneously upload WT data, in addition to the already available local publicly-disclosed data.

Our findings open up several new research questions. The importance of integrating WT information with other indicators, such as the quality of care, could be investigated. In fact, there is evidence about the output-distortion effect in measuring WTs without including quality standards [52]. Moreover, in a performance evaluation perspective, combining a number of performance indicators across multiple dimensions can avoid the focus trick of the naming-and-shaming approach, given by providers target their energies towards improving a single measure while losing sight on the other indicators.

Additional more analytical studies could be run when harmonised and comparable WT data will be available. It would be also interesting to test whether the complexity of written texts (in terms of readability) combined with the chosen WT measures (e.g. average time, number of patients waiting) is associated with different levels of online access to WTs and citizens’ usage of online booking.

With this respect, the choice of a specific WT data visualization can also be studied, in order to verify whether the regions or healthcare providers have made any efforts in making WT information meaningful, easy to interpret and use also thanks to data presentation.

Future research could analyse the reasons behind the high variability and fragmentation of WT public disclosure in Italy. For example, the importance given by the healthcare organisations to the public disclosure of WTs, and the related digital services by the healthcare organisations, can play a key role: this can be investigated by studying whether they use specific managerial levers, such as incentives [53,54].

Our article presents some limitations, such as the non-representative sample consisting of two regions in the south of Italy, three in the centre and six in the north. This did not allow us to completely map the whole scenario in Italy. Furthermore, a comparative evaluation of the Italian practices aiming to identify

the best practice was out of the scope of this work. Nevertheless, some results from a qualitative in-depth study on good practices for online disclosure of health information in Italy can be found in De Rosi and colleagues [55,56].

5. Conclusions

Publicly reporting WTs on websites is expected to foster the transparency and accountability of the healthcare system and to achieve performance improvements thanks to the comparisons among providers and a more informed choice for citizens.

While citizens may be very interested in WT data, there are still several significant barriers in Italy: the low readability of WT online information, the non-standard and not easy-to-find location of WT data on websites, the variability in parameters and the level of aggregation adopted to report WT statistics. These findings suggest most healthcare organisations in Italy interpret the online public disclosure of WTs as merely compliance with the law rather than an opportunity for interfacing with the public.

Several regions have adopted policies regarding WT data integration within e-booking services. This trend can act as a driver to reduce some barriers for citizens in accessing, understanding, contextualizing and using WT data for managing their care paths. Integrating online booking within WT public disclosure systems can be an effective communication channel towards citizens, when designed to be transparent, accessible, readable and usable.

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Declaration of Competing Interest

The authors declare that they have no conflicts of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.healthpol.2020.05.012>.

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