

Public Health Programme



(Grant Agreement N° 2009 11 13)

Analysis Online Survey Users' Perspectives

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Executive Summary

Objective of the Chain of Trust Online Survey

The Chain of Trust Online Survey was the second activity implemented under the remit of Work Package 4 (Assessment of patients and health professionals' perspective on telehealth).

The Chain of Trust survey was implemented in order to validate and complement the findings of the literature review by gathering additional knowledge on patients' and health professionals' perspectives on telehealth with a view to understanding not only what facilitates the adoption of telehealth services, but also, and perhaps even more importantly, what barriers there still are for users to have confidence in and acceptance of this innovative type of services.

This additional knowledge will then feed into the next project activity, notably the six national workshops that the consortium will implement in six European countries (i.e. Portugal, Latvia, the Netherlands, Greece, Poland and Norway) where the information so far collected will be further discussed and analysed with representatives of patients and health professionals through more qualitative research methods (focus groups).

Methodology

Two questionnaires - one for patients (Annex 1) and one for healthcare professionals (Annex 2) - were designed for this purpose based on the key findings and main knowledge gaps found in the literature review. The questionnaires consist of three parts: the first part aiming to gather general information about the respondents (demographics); the second part designed to explore the use of telehealth services among the respondents; and the last part (core section) constituted of statements aiming to explore the experience and/or perceptions among users and non-users of telehealth services in relation to issues such as confidentiality, patient-professional relationship, patient safety, clinical efficiency and accuracy, roles and responsibilities, etc.

The questionnaires were tested with representatives of the users' groups and hosted online using SurveyMonkey® platform where they were available from 13 June until 25 July, 2011. The questionnaires were available in 13 languages for patients and 12 languages for healthcare professionals. The languages were English, Spanish, French, Polish, German, Dutch, Greek, Latvian, Romanian, Italian, Lithuanian (patients only), Portuguese, and Norwegian. They were disseminated through existing communication platforms of the Chain of Trust partners: EPF, PGEU, EFN, CPME, SUSTENTO, NST and TIF.

The analysis of the results was undertaken using IBM SPSS Statistics® Version 19.0. The first stage was conducting exploratory analyses of data frequencies and cross tables, while in the second stage hierarchical cluster analysis was adopted in order to interpret the way statements were clustered through dendograms.

Main Results

6704 responses were recorded. The number of responses to the questionnaire for patients was 1646 and 5058 for health professionals. All 27 EU Member States were represented in the survey as well as the non-EU countries participating in the EU Public Health Programme, i.e. Croatia, Iceland, Lichtenstein and Norway. It is therefore important to note that both surveys (patients and health

professionals) reached out healthcare professionals and patients in all the EU 27 countries. This is a significant achievement for the project.

The majority of respondents were women (68% within patients and 71% within health professionals). The largest age group of respondents was 35-49 years old (the age of 40 as mean of the group). The largest group of health professionals that responded to the survey were nurses (67%), followed by physicians 13% and pharmacists 7%.

Patients' experiences and views on telehealth

Key findings

A certain degree of responsibility shift from health professionals to patients is inherent in many telehealth services. To ensure acceptance of telehealth among patients it is, therefore, important to ensure they are willing, and more importantly, ready, i.e. being equipped with the skillset required, to take up more responsibilities for the management of the condition, etc. If one fails to ensure this, chances are that this could turn out to be a barrier to telehealth adoption. This is also, obviously, a major ethical issue that needs to be thoroughly assessed before making a decision as to whether telehealth could be the best option for a patient.

Interestingly, our survey revealed that patients are in principle willing to take up additional responsibility for managing their condition. This holds true for 92% of the patients who responded to our survey. In addition to that, 48% of the patient user respondents said they are confident they can handle the additional responsibilities presented by the use of telehealth in managing their condition.

Confidentiality is not an important issue for patients when it comes to telehealth. Patients also think that privacy is not put at risk by telehealth and would be in principle willing to compromise on some aspects relating to their privacy as long as telehealth yields other benefits.

Patient users think that telehealth is in principle as safe as conventional healthcare services, while non-users tend to think that patient safety is reduced when using telehealth.

Patients think that telehealth is a valid complement to conventional healthcare services, but it shall not replace face-to-face contacts between patients and health professionals. All this largely confirms the findings of the literature review and highlights the importance of keeping a minimum of face-to-face contacts between the patients and health professionals. There is sufficient evidence coming from both the literature and the survey that this element is a key pre-condition for maintaining mutual trust among users when introducing telehealth. This is in line with a patient-centred model of care whereby health services are designed around the needs of the patient and not the other way round.

Patients tend to think that telehealth carries the potential for improving the quality as well as access to healthcare for patients living in underserved areas, and to a lesser extent, for socio-economically disadvantaged patients. These findings seem to suggest that overall patients think that telehealth can potentially reduce health inequalities enabling patients to use healthcare service remotely and through more affordable healthcare services. We need, however, to be extremely mindful in interpreting these findings as only to a limited extent did we manage through our survey to capture the views of patients belonging to lower socio-economic classes.

Patients think that telehealth could improve their knowledge of the condition as well as the adherence to treatment. This is indicative of the fact that telehealth, if implemented properly, could be instrumental in strengthening patient empowerment.

Patients also think that telehealth could lead to economic benefits for them, i.e. less money spent on

healthcare. At the same time, provided telehealth yields other benefits, they would be willing to pay more for healthcare services as long as an individual can afford it.

Patient perception of the impact of telehealth on patient-professional communication is not straightforward. Overall, as shown in the detailed findings, no definitive conclusion can be drawn as to whether telehealth leads to improvement or deterioration of communication and relationship with health professionals.

Detailed findings

- The large majority of patients who participated in the survey were not familiar with telehealth services. Only 14% of patients knew of the existence of telehealth services in their area and only 6% of the respondents were using or had used telehealth services in the past.
- Only 13% of telehealth users have received training on telehealth in the last three years.
- 70% of respondents rate telehealth services positively. Only 9% of non-users do not see any benefits of using telehealth services at all.
- 92% of patients want to play a more active role in managing their own health condition. 62% respondents declared they would like to use telehealth in the short to medium term.
- 44% of the patient users and 30% of non-users are willing to compromise on certain aspects of their privacy in favour of using telehealth as long as they perceive other types of benefits.
- 75% assume that telehealth improves the access to healthcare for patients living in underserved areas while 67% think that telehealth improves access for disadvantaged patients.
- 72% respondents regard telehealth as a valid complement to the conventional healthcare services.
- 77% of the patients (90% of telehealth users) think that telehealth should not replace face-to-face contacts with healthcare professionals.
- 75% of patients' users and 53% of the non-users think that telehealth saves money they spend on healthcare. 73% of users and 55% of non-users responded positively to the statement that telehealth improves the knowledge of his/her health condition.

Professionals' experiences and views on telehealth

Key findings

Health professionals are in principle less confident that patients have the right skillset required for them to be able to use telehealth effectively and safely. Only 29% of healthcare professionals think that patients are sufficiently competent to use telehealth tools. 39% of user respondents consider their patients as competent to use telehealth tools, while only 17% of non-users agree with the statement. 38% of user and 52% of non-user healthcare professional respondents disagree with the statement that patients are sufficiently competent to use telehealth tools. Males more often think that patients are competent to use telehealth tools.

Education and continuous training is crucial in ensuring health professionals are appropriately equipped to use telehealth and as such, it is a key driver of acceptance. Health professionals who have received ad-hoc training on telehealth generally think that telehealth services and applications are not difficult to use, while this tends not to be the case for those who did not receive any training.

Health professionals largely agree with patients in saying that confidentiality is not a major issue in telehealth. Health professionals who are users of telehealth tend to think that telehealth does not undermine patient safety and, although to a less extent, diagnosis accuracy, but think at the same time that telehealth makes it more difficult for health professionals to evaluate the physical and emotional condition of the patients. The latter is shared by non-users, who, however, are in general more sceptical as regards the safety of telehealth and accuracy of diagnosis made through telehealth *vis-à-vis* more conventional services.

Healthcare professionals esteem that telehealth carries the potential for improving access to healthcare, at least geographically. They also think that telehealth can improve cooperation among professionals and increase the quality of healthcare they deliver. They, however, think that telehealth does not contribute to decreasing their workload, but could actually generate more workload for a health professional. Interestingly, they tend to agree with patients on the fact that telehealth can be instrumental in fostering patient adherence to treatments.

While there is general agreement among health professionals that telehealth should not fully replace face-to-face contacts with patients, which is a fundamental element behind maintaining mutual trust and fostering acceptance, they also think that telehealth does not have a negative impact on the communication with patients.

The high majority of health professionals would be willing to use telehealth in the short-medium term which is contrasted with the fact that only a minority of health professionals think that telehealth fulfil their professional and environmental working needs. This applies to both users and non-users of telehealth. As such, a minority of healthcare professionals indicated that the management of their work place promotes the use and implementation of telehealth.

Detailed findings

- 34% of the health professionals are familiar with providing telehealth services and 36% of the responding health professionals have telehealth services available in their working environment.
- 20% of the respondents provided health services with the support of telehealth among which 82% rate their experience with telehealth positively.
- 44% of users and 5% of non-users followed training on telehealth in the past three years.
- 2982 health professional respondents have never used telehealth in the provision of health services for the following reasons:
 1. “There are no telehealth services available at my place of work” (75%)
 2. “I do not see major benefits in using telehealth” (4%)
 3. “The use of telehealth services is not (sufficiently) reimbursed” (7%),
 4. Other reasons (14%).
- Only 29% of healthcare professionals responding to the survey think that patients are sufficiently competent to use telehealth tools.
- 62% of those who received training in the past three years indicated that telehealth services and applications are not difficult to use compared to 36% of those who did not receive any training.
- 45% feel they have been adequately trained to use telehealth services and tools. 38% of the users, however, feel not having sufficient training to use telehealth.

- 66% of users and 52% of the non-users disagree that telehealth affects the confidentiality of data negatively.
- 46% of the users and 30% of non-users think that telehealth is as safe as conventional face-to-face healthcare services.
- 79% of the healthcare professionals think that telehealth is a valid complement to conventional health services.
- 81% of healthcare professionals (87% users) think that telehealth improves access to healthcare for patients living in underserved areas.
- 64% of respondents (78% of users) think that telehealth improves cooperation among healthcare professionals.
- 70% of the healthcare professionals (85% of users and 64% of non-users) think that telehealth increases the quality of health services delivered.
- 68% of users think that telehealth helps them to stay regularly in contact with patients.
- 30% of healthcare professionals using telehealth see a reduction in their workload while 40% of the users disagree with the statement “telehealth helps to reduce workload”.
- 88% of healthcare professionals think that telehealth should not replace face-to-face contact with patients.
- 43% of health professionals indicate that their workplace has sufficient technical facilities to provide telehealth while 38% think this is not the case.

Key conclusions

Overall both patients and health professionals who responded to this survey rated their experiences and/or perceptions of telehealth as positive. There is a lack of awareness of the existence and availability of telehealth services among patients. Healthcare professionals are slightly more aware regardless of whether they use telehealth or not. Overall the level of large-scale implementation of telehealth services within the surveyed population is very limited.

This indicates that a lot of effort needs to be put into raising awareness of telehealth services through engaging users and providing them support in the implementation of telehealth services. In this sense, health professionals play a central role in informing the public about telehealth services, and their role as key players in disseminating the existence but also the potential benefits of telehealth services need to be reinforced.

There is a clear link between the patient involvement, the education/training provided and the use of telehealth services. The patients who consider telehealth applications as difficult to use, are among the ones who have not received any training on using these services. This highlights the need to put more effort into training for all users.

Patients are generally willing to play a more active role in managing their own health condition. However, a smoother adaptation process would require continuous follow-up with patients and health professionals when they use telehealth services.

As a general remark we can confidently say that threat to data confidentiality does not seem to represent one of the major barriers to telehealth adoption for either group. Those using telehealth are less concerned than non-users about the confidentiality of their data. Moreover, the results indicate that patients would even compromise certain aspects of their privacy if it helped them to self-manage their condition. Patients want to play a more active role in managing their own conditions, provided that face-to-face contacts with health professionals are maintained alongside

telehealth consultations and remote monitoring enabled by telehealth.

Those using telehealth find these services helpful in increasing the quality of health services. Patients think that telehealth can support the healthcare process as they see many benefits at various levels ranging from better quality of life to patient empowerment. Interestingly enough, should such benefits effectively materialise, patients would seem to be even willing to pay more for health services. In judging this statement, we need, however, to emphasise that only 16.3% of the surveyed population (Table 14) is made up of patients who position themselves in either upper-lower or lower-lower class. Therefore, policy-makers should pay particular attention to avoid the benefits of telehealth to be only enjoyed by the socio-economically better-off who can afford to pay more for their healthcare. Otherwise there is a chance that health inequalities ultimately increase as a result of wider deployment of telehealth.

Patient users think that telehealth does not have a negative effect on their communication with their health professionals. However, there are still some concerns among the surveyed patients about the ability of the professionals to effectively capture the physical and emotional conditions of the patient through telehealth.

As far as health professionals are concerned, a larger proportion is aware of the services available. Most health professional respondents define themselves as familiar with telehealth stating that their awareness of the services does not necessarily entail previous usage. The services that professional users use most often are data analysis, monitoring of vital signs, health promotion and education.

Overall, health professionals think that telehealth is a valid complement to conventional services as it has the potential to increase quality of care, patient adherence, improving cooperation among health professionals, and contacts with patients, especially in underserved areas and for vulnerable patient groups.

The involvement of different health professionals in setting up and testing telehealth services have been identified as a pre-condition for both health professionals to be more confident in using the services and also these services to meet professionals' needs. It is therefore recommended that, in order for health professionals to pick up telehealth services, a better framework for continuous professional development should be developed engaging all health professionals as well as patients. There is still work to be done in this regard as one of the major barriers for telehealth adoption according to health professionals surveyed are the perceived lack of necessary knowledge and skills.

Health professionals rate their experience with telehealth very positively despite the fact that some aspects require improvement in order to maximise benefits of telehealth and allow the integration of telehealth in mainstream healthcare services. Although non-user health professionals are willing to use telehealth, they think that there are not enough technical support and promotion of telehealth by the management of the workplace.

There is a clear relationship between whether healthcare professionals find telehealth easy to use and whether they have received any training on telehealth in the past. Male healthcare professionals more often feel adequately trained, which also highlights the need to take a gender perspective when offering opportunities for continuous professional development (CPD). As displayed by the cluster analysis, health professionals think that it is important to focus on the professional needs of health professionals which is strongly linked to patient information and improvement of patients' health status through user-friendly technologies.

Most health professionals think that using telehealth services should allow a reduction of their workload, knowing that patients bear more responsibility for managing their own conditions. According to the health professionals' views, telehealth improves cooperation among healthcare professionals and access to healthcare for vulnerable patient groups and patients living in

underserved areas.

The results of the survey also confirmed that while telehealth should reduce or avoid unnecessary visits to the physician's office, it should not entirely replace face-to-face contacts with patients, as this is a key element in maintaining mutual trust. Likewise, health professionals surveyed mostly agree that communication with patients should not be undermined due to the use of telehealth because of the difficulty health professionals face in assessing patients' physical and emotional statuses.

With regard to the promotion of use and implementation of telehealth, awareness of telehealth benefits is not crucial only for patients but equally for managers, Chief Medical Officers, Chief Nursing Officers, hospital directors, politicians. Health professionals emphasise the need to pay more attention to the workplace, the management and the continuous professional development.

To conclude, when analysing patients' and health professionals' views together and taking into account previous knowledge gathered through the literature review, we can confidently say that patients and professionals views and perspectives analysed through the frequency tables looked quite similar, but when applying more advanced analysis techniques, like Cluster analysis, views tend to differ on the specific questions posed. These findings corroborate that each group needs to be consulted and taken into account as their views and needs are different and would influence the uptake and implementation of telehealth services.

1. Introduction

1.1 Objective of the Online Survey

The Chain of Trust Online Survey was the second activity implemented under the remit of Work Package 4 (Assessment of patients and health professionals' perspective on telehealth).

The Chain of Trust survey was implemented with two objectives in mind, to validate the findings of the literature review and complement such findings by gathering additional knowledge on patients' and health professionals' perspective on telehealth with a focus on identifying what barriers there still are for users to have confidence in and acceptance of this innovative type of services.

This additional knowledge will then feed into the next project activity, notably the six national workshops that the consortium will implement in six European countries (i.e. Portugal, Latvia, the Netherlands, Greece, Poland and Norway) where the information so far collected will be further discussed and analysed with representatives of patients and health professionals through more qualitative research methods (focus groups).

1.2 Methodology

1.2.1 Survey design and launch

1.2.1.1 Questionnaires' design

Two questionnaires – one for patients (Annex 1) and one for healthcare professionals (Annex 2) – were developed for this purpose based on the key findings and main gaps found in the literature review undertaken by the Chain of Trust partners. The questionnaires consisted of three different parts:

- first part aiming to gather general information about the respondent (demographics);
- second part oriented towards exploring the use of telehealth services among the respondents; and
- third part constituted of statements aiming to explore the experience and perceptions among users and non-users of telehealth services addressing issues identified in the literature review, e.g. confidentiality, accuracy, quality of care, etc.

1.2.1.2 Pilot Testing

A group of volunteers identified by each partner organisation participated in piloting the English version of the questionnaires. The pilot group provided preliminary feedback in relation to the design and overall clarity of the questions, before releasing the questionnaire to the wider population.

Following the feedback received during the pilot phase, the questionnaires were reviewed and translated into different languages. The patients' questionnaire was translated into 12 languages (Spanish, French, Polish, German, Dutch, Greek, Latvian, Romanian, Italian, Lithuanian) while the health professionals questionnaire was translated into 11 languages (the same as above with the exception of Lithuanian).

1.2.1.3 Launch and Dissemination of the Survey

The data for the analysis was gathered using an online questionnaire which, as mentioned above, was available in 13 languages for patients and 12 languages for healthcare professionals.

The questionnaires were hosted online anonymously using SurveyMonkey platform and were available from 13 June until 25 July, 2011.

The dissemination of the survey was done via existing communication platforms of the EPF, PGEU, EFN, CPME, SUSTENTO, NST and TIF. CPME, EFN, EPF and PGEU are umbrella organisations and their national members promoted the survey within their membership. The dissemination of the questionnaires was made via the internal communication platforms of the partners. Additionally, it was promoted during internal meetings of the partners and placed on the website of the project and websites of partners.

Follow-up announcements were sent periodically to the same groups. As well as personal messages resuming the response level from different countries were sent to the local contacts in the countries with low response rates, encouraging to promote the questionnaire via existing local communication channels.

Thanks to the strong dissemination outreach of the partners of the Chain of Trust project the consortium was able to reach out a wide population, including respondents from 31 European countries.

1.2.1.4 Sample Size

Our initial target for this activity was to collect approximately 4000 responses in total split up evenly across the four user groups identified for the Chain of Trust project, i.e. patients, nurses, doctors and pharmacists. This target was attained and on the closing day there was 6704 responses recorded in the system, even though the even distribution of responses across the four groups as well as across country of residence/practice proved to be difficult to achieve.

1.2.1.5 Ethical Considerations

All participants were given information about the project and the survey, and were assured that the data obtained would be protected and treated as strictly confidential in all reported findings.

1.2.1.6 Limitations

The reader needs to acknowledge that the Chain of Trust survey has several limitations with regards to representativeness and geographical coverage. Therefore, the results of the survey and the data collected are not meant to represent the views of the EU population at large or that of the population living in each of the countries from where responses were collected.

Moreover, results have showed that the survey failed to reach less educated patients and those coming from lower socio-economic classes.

It also needs to be remarked that the majority of patients who responded to the survey are non-users of telehealth services.

Furthermore, the third part of the survey meant to test experience and/or perceptions towards telehealth services, was formed of fixed statements to which respondents could not react freely, but could provide their views in a five-level Likert scale: 'strongly agree', 'moderately agree', 'neither agree nor disagree', 'moderately disagree' and 'strongly disagree'. The statements, while already formulated by the partners do not represent a subjective or aleatory opinion of the partners; they were based on an in-depth literature review study that helped to map out potential barriers to and

perceptions of telehealth.

The double-folded limitations of the survey were taken into account and recognised by partners.

1.2.2 Data Analysis

Survey Monkey offered the opportunity to code results when recording each response, therefore data was exported and analysed using the IBM SPSS Version 19.0. There were 13 databases for patients and 12 databases for healthcare professionals, which were respectively merged into two single mother databases, one for patients and one for healthcare professionals.

After the closure of the online survey, data was coded for the further analysis. First, an exploratory analysis of data frequencies was made by groups of respondents and all questions as variable. The understanding of the raw data was then captured through the exploration of the demographic data including general frequency tables and cross table analysis.

A second phase, beyond frequency and cross tables, enabled the raw data to be more visible for all European citizens, included a cluster analysis based on the assignment of a set of observations into different subsets (clusters) aligning data that were similar or different in some sense (positive perceptions and negative perceptions or barriers and facilitators). Cluster analysis is widely used when working with multivariate data which can help analysing the different collected data sets in a comparative way. These findings can then be benchmarked with the existing knowledge as captured in the literature review and through the different focus groups organised. Nevertheless, the cluster analysis only focussed on specific segments of the data mainly indicated as important by the partners. Within this context, a better understanding of the relationships between different groups, within and between, was achieved.

1.2.2.1 Missing Values

The design of the questionnaire was prepared to inform the respondent when clicking the submission button in case the questionnaire was incomplete. Some incomplete questionnaires, however, were recorded in the database. Due to the impossibility to understand why some values were missing, we included those in the analysis. They became missing values, which have an important place within the statistical endeavour.

1.2.2.2 Level of Significance

In order to ensure robustness of the results, a probability level of $p \leq 0.01$ was used throughout the analysis to identify significant associations while $p \leq 0.05$ highlighted weaker associations. These probability levels informed the decision for further analysis.

2. Demographic data

This section presents the results and findings relating to the first part of the questionnaire. As mentioned in paragraph 3 (Methodology) this part consisted of a set of questions aimed at gathering general information about the respondent (demographics). The results of the patient questionnaire are presented in section 2.1, while the results of the health professionals' questionnaire are reported in paragraph 3.2.

The sample size used for the data analysis was 6704, split as follows: 1646 consisting of patient respondents and 5058 consisting of health professionals.

2.1 Demographic Data of Patients

2.1.1 Place of residence and language chosen to respond

Overall, there is a quite equal distribution of responses over 11 languages in which the surveys were available with outstanding popularity of Latvian and Portuguese language versions **Error! Reference source not found.**

Table 1 indicates that the Portuguese language has the highest response rate (36.1%), followed by Latvian (22.7%) while Polish is lowest rated (n=22, 1%).

Table 1: Patients: Language chosen to respond

Language Version	Number of Responses	Percentage (%)
German	67	4,1
English	170	10,3
Spanish	70	4,3
French	53	3,2
Greek	42	2,6
Italian	38	2,3
Lithuanian	69	4,2
Latvian	373	22,7
Dutch	31	1,9
Norwegian	56	3,4
Polish	22	1,3
Portuguese	594	36,1
Romanian	61	3,7
Total	1646	100,0

Additionally, it is important to look at the country of residence of the responding patients. The European countries with the highest response rate were Portugal (35%), followed by Latvia (22%).

The questionnaire was available in thirteen language versions, which we think helped to collect responses from 30 countries (Table 2), including Lichtenstein, Croatia, Norway and Iceland. It is important to note that in relation to patient views all EU 27 Member States are represented in the findings.

Table 2: Patients - Country of Residence

Country	Frequency	Percentage (%)	Valid Percentage	
Valid	Austria	11	0,7	0,7

	Belgium	29	1,8	1,8
	Bulgaria	11	0,7	0,7
	Croatia	2	0,1	0,1
	Cyprus	27	1,6	1,6
	Czech Republic	3	0,2	0,2
	Denmark	8	0,5	0,5
	Estonia	17	1,0	1,0
	Finland	1	0,1	0,1
	France	42	2,6	2,6
	Germany	39	2,4	2,4
	Greece	17	1,0	1,0
	Hungary	14	0,9	0,9
	Iceland	14	0,9	0,9
	Ireland	9	0,5	0,5
	Italy	39	2,4	2,4
	Latvia	367	22,3	22,4
	Liechtenstein	22	1,3	1,3
	Lithuania	69	4,2	4,2
	Luxembourg	4	0,2	0,2
	Malta	15	0,9	0,9
	Netherlands	22	1,3	1,3
	Norway	43	2,6	2,6
	Poland	23	1,4	1,4
	Portugal	585	35,5	35,6
	Romania	69	4,2	4,2
	Slovenia	8	0,5	0,5
	Spain	72	4,4	4,4
	Sweden	12	0,7	0,7
	United Kingdom	48	2,9	2,9
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

Within the patients group, it is important to take a close look at the number of users and non-users of telehealth services (Table 3). The majority of responses came from Portugal (36%); which is also the country with more telehealth users (42%), followed by Latvia (9%) and UK (9%). This table equally shows the statistical weaknesses when interpreting the frequencies, cross-tables and clusters. Some users' views in some countries are represented by one patient.

Table 3: Patients - Distribution of users and non-users by country of residence

Country		Have you ever received health services with the support of telehealth?		Total
		Yes	No	
Austria	Count	1	8	9
	%	1,1%	0,5%	0,6%
Belgium	Count	0	27	27
	%	0,0%	1,8%	1,7%
Bulgaria	Count	1	10	11
	%	1,1%	0,7%	0,7%
Croatia	Count	0	2	2
	%	0,0%	0,1%	0,1%
Cyprus	Count	1	24	25
	%	1,1%	1,6%	1,6%
Czech Republic	Count	0	3	3
	%	0,0%	0,2%	0,2%

Denmark	Count	0	6	6
	%	0,0%	0,4%	0,4%
Estonia	Count	2	15	17
	%	2,2%	1,0%	1,1%
Finland	Count	0	1	1
	%	0,0%	0,1%	0,1%
France	Count	2	38	40
	%	2,2%	2,5%	2,5%
Germany	Count	1	36	37
	%	1,1%	2,4%	2,3%
Greece	Count	1	15	16
	%	1,1%	1,0%	1,0%
Hungary	Count	0	14	14
	%	0,0%	0,9%	0,9%
Iceland	Count	1	11	12
	%	1,1%	0,7%	0,8%
Ireland	Count	0	9	9
	%	0,0%	0,6%	0,6%
Italy	Count	5	33	38
	%	5,4%	2,2%	2,4%
Latvia	Count	8	351	359
	%	8,7%	23,4%	22,6%
Liechtenstein	Count	0	22	22
	%	0,0%	1,5%	1,4%
Lithuania	Count	4	64	68
	%	4,3%	4,3%	4,3%
Luxembourg	Count	0	4	4
	%	0,0%	0,3%	0,3%
Malta	Count	0	15	15
	%	0,0%	1,0%	0,9%
Netherlands	Count	2	20	22
	%	2,2%	1,3%	1,4%
Norway	Count	7	32	39
	%	7,6%	2,1%	2,4%
Poland	Count	1	18	19
	%	1,1%	1,2%	1,2%
Portugal	Count	39	533	572
	%	42,4%	35,5%	35,9%
Romania	Count	3	66	69
	%	3,3%	4,4%	4,3%
Slovenia	Count	2	6	8
	%	2,2%	0,4%	0,5%
Spain	Count	0	69	69
	%	0,0%	4,6%	4,3%
Sweden	Count	3	9	12
	%	3,3%	0,6%	0,8%
United Kingdom	Count	8	39	47
	%	8,7%	2,6%	3,0%
Total	Count	92	1500	1592
	%	100,0%	100,0%	100,0%

The **'Type' of place of residence** (village, town, etc.) is not analysed as it becomes extremely difficult to recode and standardise this item so that it can make some sense in the analysis. Therefore, we decided not to focus on place of residence, but on the **'Size' of the place of residence**, where the patient is living.

Most respondents come from small or very small communities (Table 4), between 1.000 and 10.000 inhabitants (24%). Nevertheless, a similar percentage of patients live in towns with between 10.000 and 50.000 inhabitants (22%). Additionally it is important to note extremes with 122 (7%) respondents coming from very small villages, and 180 (11%) respondents living in large metropolises with above one million inhabitants.

Table 4: Patients- Size of community one lives in

		Frequency	Percentage	Valid Percentage
Valid	<1000	122	7,4	7,4
	1001-10.000	390	23,7	23,8
	10.001-50.000	357	21,7	21,7
	50.001-100.000	194	11,8	11,8
	100.001-250.000	166	10,1	10,1
	250.001-500.000	90	5,5	5,5
	500.001-1.000.000	143	8,7	8,7
	>1.000.001	180	10,9	11,0
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

Nevertheless, no relationship was found between the impact and use of telehealth technologies in relation to the size of the communities' patients live in. (Table 5).

Table 5: Patients - Distribution of users according the size of community

Number of Inhabitants		Count	%
	<1000	3	3.3%
	1001-10.000	22	23.9%
	10.001-50.000	21	22.8%
	50.001-100.000	12	13.0%
	100.001-250.000	15	16.3%
	250.001-500.000	1	1.1%
	500.001-1.000.000	4	4.3%
	>1.000.001	14	15.2%

2.1.2 Gender

The second important variable in relation to demographics of patients' population captured by the study is 'gender'. Out of the 1646 patient respondents the majority are women, 68% (Table 6).

Table 6: Patients- Gender

		Frequency	Percentage	Valid Percentage
Valid	Male	523	31,8	31,9
	Female	1119	68,0	68,1
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

2.1.3 Age

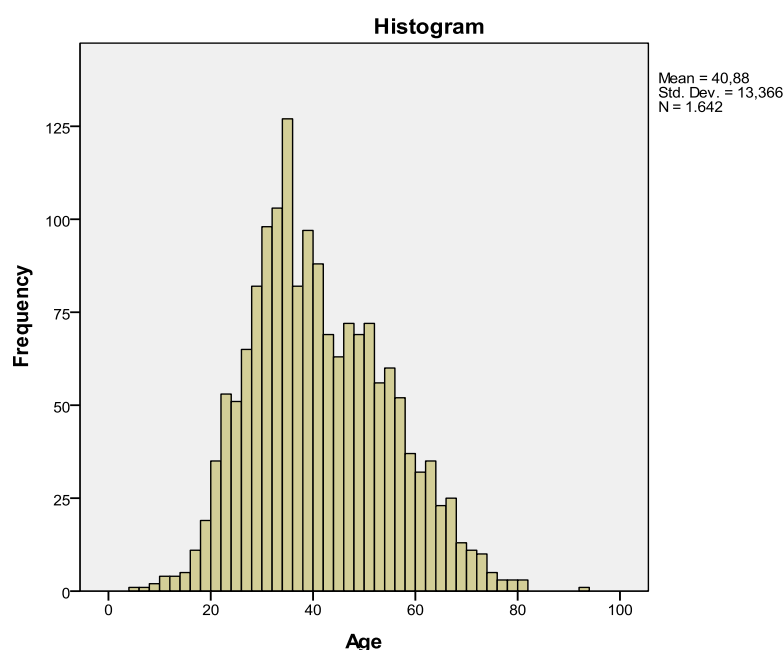
Another important variable is the age of the respondents. The largest age group of respondents is 35-49 years. While the youngest respondent to the survey is a 5 year-old patient, the oldest is 92 years old. The mean age of the group is 40 (Table 7).

Table 7: Patients Age Distribution

		Frequency	Percentage	Valid Percentage
Valid	0-15	17	1,0	1,0
	16-24	146	8,9	8,9
	25-34	446	27,1	27,2
	35-49	591	35,9	36,0
	50-65	358	21,7	21,8
	>65	84	5,1	5,1
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

It is also interesting to visualise this distribution in a histogram (Figure 1).

Figure 1: Patients - Distribution by Age



When we focus on the user patients' group, the largest age group of users is between 35-49 years (46%), followed by 25-34 year olds (27%) (Table 1).

Table 8: Patients/Users - Age

		Frequency	Percentage	Valid Percentage
Valid	16-24	6	6,5	6,5
	25-34	25	27,2	27,2
	35-49	42	45,7	45,7
	50-65	17	18,5	18,5
	>65	2	2,2	2,2
	Total	92	100,0	100,0

2.1.4 Distance to Health Facilities

To explore the barriers in using telehealth services it is important to know the distance to the nearest health facility from patients' homes as this may impact on how patients perceive telehealth services in general. Nevertheless, no significant differences were found when analysing users' and non-users' willingness to use telehealth in relation to the distance from a healthcare facility, the

primary care centre and hospital. It is important to note that the majority of the respondents are patients that have these healthcare facilities within a very close reach and consequently, views of patients coming from underserved areas are not captured in the findings.

80% of patients indicated that the hospital is 30 minutes away from their home; in 8% of cases it is reachable within 5 minutes and in 45% of the cases it would take no more than 15 minutes to reach the nearest hospital. Therefore, we can conclude that the hospital services are delivered very close to the respondents' place of residence. This finding might directly impact on the perception of respondents in relation to telehealth services as specialised care is within close (and perhaps easy) reach to those patients that responded to the survey.

When asked how long it takes for them to reach the nearest Primary Care Centre, 93% of the respondents indicated that it was reachable in 30 minutes, out of which 70% are able to reach it in 15 minutes. A similar trend is observed in relation to distance from the GP Office and could be explained by the fact that the GP office is an interchangeable health care setting with Primary Care Centre in some countries. 91% of respondents are able to reach their GP Office in 30 minutes, of which 71% are able to access this health facility in maximum 15 minutes. 58% of patients have their community pharmacy within 5 minutes reach from their home. 98% of the respondents can reach their closest community pharmacy in maximum 30 minutes, while for 90% it takes up to 15 minutes. Other health facilities indicated by respondents were ambulance, dentist's office, physiotherapy, private offices of various specialist doctors, etc. Nevertheless, 67% of those health facilities are reachable in 30 minutes of which 47% within 15 minutes.

Table 9: Patient - Distance to the health facility

Distance		Hospital	Primary Care Centre	GP's Office	Community Pharmacy	Other
1-5 minutes	Count	138	414	463	951	53
	Column N %	8,4%	25,4%	28,4%	58,1%	19,3%
6-15 minutes	Count	606	720	697	521	75
	Column N %	36,9%	44,1%	42,7%	31,8%	27,3%
16-30 minutes	Count	574	380	327	130	56
	Column N %	35,0%	23,3%	20,0%	7,9%	20,4%
31-59 minutes	Count	249	84	103	24	35
	Column N %	15,2%	5,2%	6,3%	1,5%	12,7%
1-2 hrs	Count	63	22	31	7	28
	Column N %	3,8%	1,3%	1,9%	0,4%	10,2%
2.1-5 hrs	Count	9	5	6	2	16
	Column N %	0,5%	0,3%	0,4%	0,1%	5,8%
>5 hrs	Count	3	6	6	2	12
	Column N %	0,2%	0,4%	0,4%	0,1%	4,4%

2.1.5 Size of the household

Another important demographic parameter captured by the survey is the size of the household as it may indicate an increased need of care and use of telehealth for the patient. When responding to the question about the size of the household (Table 10), 13% of patients indicate living alone. 33% of respondents shared their household with one more member, while 45 % of respondents lived in households with 3-4 members.

Table 10: Patients - Size of the household

Size of the household	Frequency	Percentage	Valid Percentage
Valid	1	214	13,0
	2	540	32,8

	3	413	25,1	25,2
	4	339	20,6	20,6
	5 AND MORE	136	8,3	8,3
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

When looking at the distribution of households according to the age of respondent (Table 11) it is important to note that the highest percentage of patients living alone within the age group is over 65 years old. There is also a relatively high percentage of 50-65 year patients living alone (16 %).

Table 11: Distribution of the household size according to age group of respondent

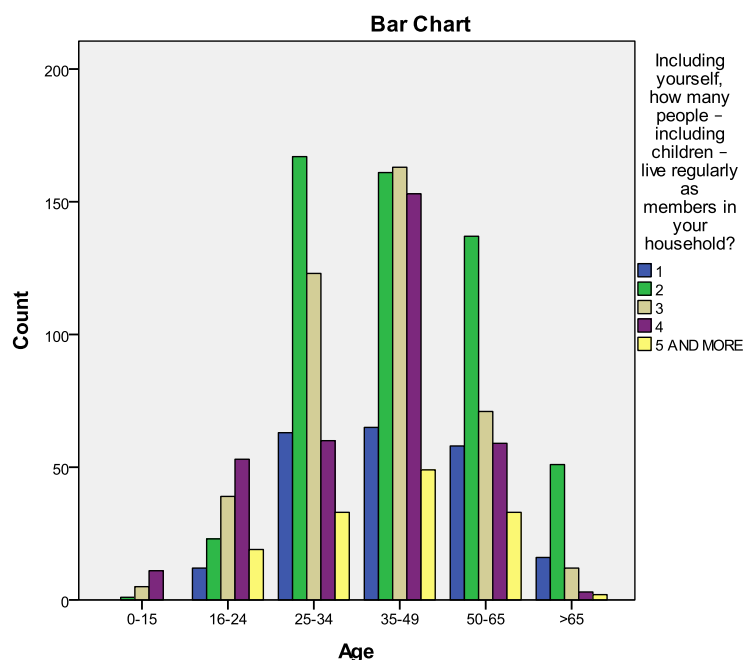
		Including yourself, how many people – including children – live regularly as members in your household?					
		1	2	3	4	5 AND MORE	
Age	0-15	Count	0	1	5	11	0
		% within Age	0,0%	5,9%	29,4%	64,7%	0,0%
16-24		Count	12	23	39	53	19
		% within Age	8,2%	15,8%	26,7%	36,3%	13,0%
25-34		Count	63	167	123	60	33
		% within Age	14,1%	37,4%	27,6%	13,5%	7,4%
35-49		Count	65	161	163	153	49
		% within Age	11,0%	27,2%	27,6%	25,9%	8,3%
50-65		Count	58	137	71	59	33
		% within Age	16,2%	38,3%	19,8%	16,5%	9,2%
>65		Count	16	51	12	3	2
		% within Age	19,0%	60,7%	14,3%	3,6%	2,4%
Total		Count	214	540	413	339	136
		% within Age	13,0%	32,9%	25,2%	20,6%	8,3%

When looking at the distribution of users according to the age and size of the household, we did not observe any significant relationship between these two variables (Table 12). Interestingly, however, only 10% of telehealth users that responded to our survey lived alone.

Table 12: Patients/Users - Distribution of age according to the size of the household

Including yourself, how many people – including children – live regularly as members in your household?		Age						Total
		0-15	16-24	25-34	35-49	50-65	>65	
1	Count	0	0	2	2	0	1	5
	%	0,0%	0,0%	14,3%	12,5%	0,0%	33,3%	10,0%
2	Count	0	1	4	4	6	0	15
	%	0,0%	20,0%	28,6%	25,0%	60,0%	0,0%	30,0%
3	Count	0	1	4	5	1	1	12
	%	0,0%	20,0%	28,6%	31,3%	10,0%	33,3%	24,0%
4	Count	2	3	3	3	2	1	14
	%	100,0%	60,0%	21,4%	18,8%	20,0%	33,3%	28,0%
5 AND MORE	Count	0	0	1	2	1	0	4
	%	0,0%	0,0%	7,1%	12,5%	10,0%	0,0%	8,0%
Total	Count	2	5	14	16	10	3	50
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Figure 2: Patients - Size of the household distributed according to the age group of respondent



2.1.6 Educational and Socio-economic Status

An important variable for the interpretation of the results are the socio-economic status and the educational level of the respondents. It is important to note that only 7% of the respondents have an educational level lower than secondary level (Table 13). Sixty-six per cent of the respondents have a university diploma. This implies that a great majority of patients that responded to the survey have attained higher education. This is an important finding as it can be concluded that the survey failed to reach out to the lower educated patients in society. It is unclear and impossible to formulate findings in relation to the accessibility and use of telehealth services according to the level of education.

Table 13: Patients - Education level

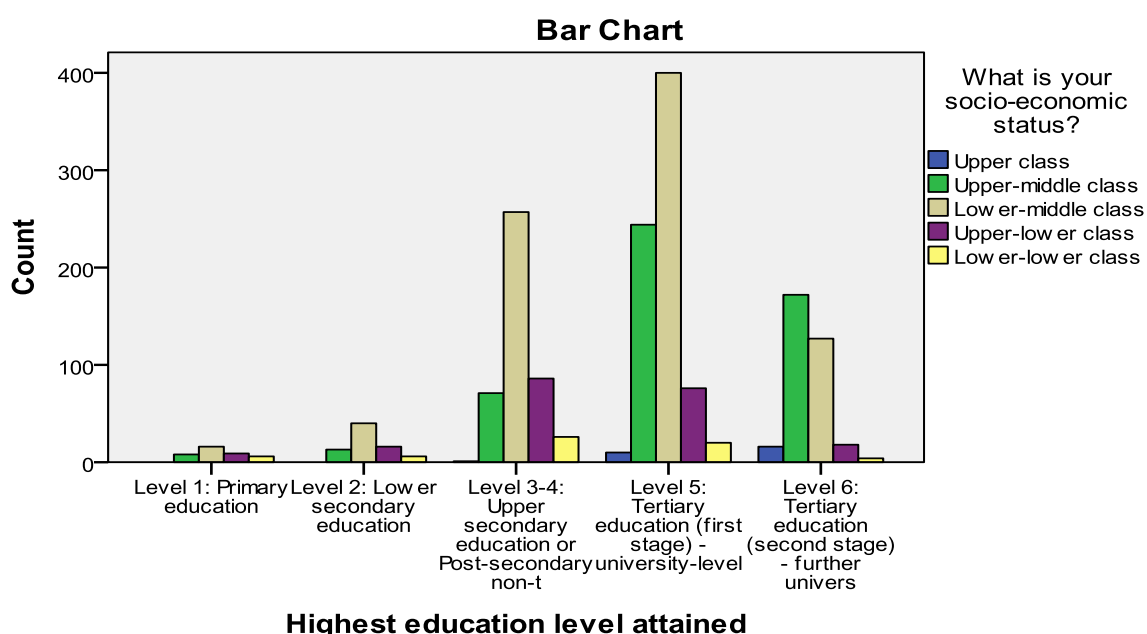
Highest Level of education attained		Frequency	Percentage	Valid Percentage
Valid	Level 1: Primary education	39	2,4	2,4
	Level 2: Lower secondary education	75	4,6	4,6
	Level 3-4: Upper secondary education or Post-secondary non-t	441	26,8	26,9
	Level 5: Tertiary education (first stage) - university-level	750	45,6	45,7
	Level 6: Tertiary education (second stage) - further university	337	20,5	20,5
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

The level of education can be linked to the socio-economic status of the respondents (Table 14). Building on the previous findings we can conclude that this survey did not reach out to socio-economically vulnerable groups which are often isolated in society. The great majority of respondents to the patient survey (84%) belonged to the middle class with 16% of respondents belonging to the lower-lower class. Very few users belong to the lower-lower class (4%).

Table 14: Patients - Socio-economic class

		Frequency	Percentage	Valid Percentage
Valid	Upper class	27	1,6	1,6
	Upper-middle class	508	30,9	30,9
	Lower-middle class	840	51,0	51,2
	Upper-lower class	205	12,5	12,5
	Lower-lower class	62	3,8	3,8
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

Figure 3: Distribution of socio-economic status according to level of education



2.1.7 Health Condition

2.1.7.1 Long term/chronic condition

When interpreting this variable it is important to note that for the purpose of this project a patient is defined as a person having a long term (chronic) condition and requiring long-term treatment. Only 55% of the respondents indicated they have a long term/chronic condition, thereby qualifying as patients as per the definition provided above (Table 15). When it comes to the actual use of telehealth and their views on telehealth services, there is no difference between the two groups, i.e. people with and without a long-term condition (Table 17). In addition we did not observe any significant difference in willingness to use telehealth in the future between these two groups to use telehealth (Table 16).

Table 15: Whether patient has a long term condition

		Frequency	Percentage	Valid Percentage
Valid	Yes	898	54,6	54,7
	No	744	45,2	45,3
	Total	1642	99,8	100,0
Missing	System	4	0,2	
Total		1646	100,0	

Table 16: Patients - Willingness to use telehealth in the future for chronically ill and having no long term condition patients

			I am willing to use telehealth services in the short to medium term					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Do you have any long term/chronic condition?	Yes	Count	156	286	218	32	17	709
		%	22.0%	40.3%	30.7%	4.5%	2.4%	100.0%
	No	Count	109	252	192	20	21	594
		%	18.4%	42.4%	32.3%	3.4%	3.5%	100.0%
Total	Count	265	538	410	52	38	1303	
	%	20.3%	41.3%	31.5%	4.0%	2.9%	100.0%	

Table 17: Patients – D

Distribution of users and non-users according to whether they have long term condition

Have you ever received health services with the support of telehealth?		Do you have any long term/chronic condition?		Total
		Yes	No	
Yes	Count	52	40	92
	%	6,0%	5,5%	5,8%
No	Count	816	684	1500
	%	94,0%	94,5%	94,2%
Total	Count	868	724	1592
	% =	100,0%	100,0%	100,0%

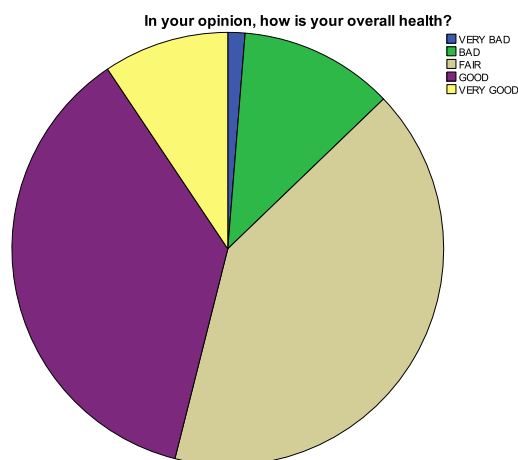
2.1.8 Overall health condition

When asked to self-evaluate their overall health condition, 41% respondents perceived their condition as 'fair' and 13% evaluate their conditions as 'bad' to 'very bad'. Only 37% respondents said that they are in 'good' or 9% 'very good' health.

Table 18: Patients - Overall perceived health

		Frequency	Percentage	Valid Percentage
Valid	VERY BAD	21	1,3	1,3
	BAD	189	11,5	11,5
	FAIR	673	40,9	41,1
	GOOD	600	36,5	36,7
	VERY GOOD	154	9,4	9,4
	Total	1637	99,5	100,0
Missing	System	9	0,5	
Total		1646	100,0	

Figure 4: In your opinion, how is your overall health?



2.1.9 Conclusions - Demographic Data of Patient Participating in the Survey

Before analysing further the responses to the survey it is important to understand what type of patient sample the Chain of Trust survey has captured. Based on the analysis of general questions we can conclude that:

- All 27 EU Member States are represented in the survey as well as Croatia, Iceland, Lichtenstein and Norway.
- More women responded to the survey than men.
- The age group 35-49 years is dominant with an average age of the sample of 41 years old.
- Most of the respondents have a university level education and belong to the middle and higher socio-economic class.
- More than 50% of patients live in a town or village having up to 50.000 inhabitants.
- The community pharmacy is the nearest health facility to the respondents' home, followed by a GP's Office, while hospital and primary care facilities are mainly located within a relatively close distance from the respondent's home. Most health facilities are reachable by respondents within 30 minutes.
- 55% of the respondents are patients, i.e. are people who have a long term condition. Out of these, 13% have reported feeling that their health is generally 'bad', while 41% reported to have a 'fair' health condition.

2.2 Demographic Data of Health Professionals

2.2.1 Respondents' workplaces and chosen language to respond

48% of health professionals that responded to the survey chose the Portuguese language version, followed by German (17%) (

Table 19). In total 12 language versions were available. It has to be highlighted that unlike the patients' questionnaire, the Lithuanian language version was not available for the health professionals' questionnaire.

Table 19: Professionals - Language chosen to respond

Language	Frequency	Percentage
German	864	17,1
English	491	9,7
Spanish	30	0,6
French	73	1,4
Greek	98	1,9
Italian	20	0,4
Latvian	219	4,3
Dutch	128	2,5
Norwegian	381	7,5
Polish	214	4,2
Portuguese	2412	47,7
Romanian	123	2,5
Total	5058	100,0

Health professionals who responded to the survey practice in 31 different countries (Table 20), with the majority of respondents working in Portugal (47%) and Germany (16%). In addition to responses received from EU Member States health professionals practicing in Croatia, Iceland, Lichtenstein and Norway responded to the survey. As the majority of health professional responses came from Germany and Portugal, especially from the nursing profession, it is important to recognise the strengths of the Likert scale.

Table 20: Professionals - Country of practice

Country of practice	Frequency	Percentage	Valid Percentage
Austria	29	0,6	0,6
Belgium	26	0,5	0,5
Bulgaria	8	0,2	0,2
Croatia	4	0,1	0,1
Cyprus	36	0,7	0,7
Czech Republic	6	0,1	0,1
Denmark	73	1,4	1,4
Estonia	2	0,0	0,0
Finland	42	0,8	0,8
France	70	1,4	1,4
Germany	817	16,2	16,2
Greece	64	1,3	1,3
Hungary	15	0,3	0,3
Iceland	139	2,7	2,8
Ireland	10	0,2	0,2
Italy	16	0,3	0,3
Latvia	219	4,3	4,3
Liechtenstein	1	0,0	0,0
Lithuania	4	0,1	0,1
Luxembourg	12	0,2	0,2
Malta	30	0,6	0,6
Netherlands	108	2,1	2,1
Norway	352	7,0	7,0
Poland	212	4,2	4,2
Portugal	2375	47,0	47,0
Romania	128	2,5	2,5
Slovakia	7	0,1	0,1
Slovenia	57	1,1	1,1

Spain	44	0,9	0,9
Sweden	8	0,2	0,2
United Kingdom	139	2,7	2,8
Total	5053	100,0	100,0

Similarly to the overall distribution of healthcare professionals respondents, the majority of users (providers) of telehealth services are from Portugal (59%), followed by Norway (7%) (Table 21).

Table 21: Professionals - Distribution of users and non-users according to country of practice

Country of practice		Have you ever provided a health service with the support of telehealth?		Total
		Yes	No	
Austria	Count	5	20	25
	%	0,5%	0,5%	0,5%
Belgium	Count	3	16	19
	%	0,3%	0,4%	0,4%
Bulgaria	Count	2	6	8
	%	0,2%	0,2%	0,2%
Croatia	Count	1	3	4
	%	0,1%	0,1%	0,1%
Cyprus	Count	6	28	34
	%	0,6%	0,7%	0,7%
Czech Republic	Count	0	5	5
	%	0,0%	0,1%	0,1%
Denmark	Count	21	50	71
	%	2,2%	1,3%	1,5%
Estonia	Count	0	1	1
	%	0,0%	0,0%	0,0%
Finland	Count	16	23	39
	%	1,6%	0,6%	0,8%
France	Count	11	53	64
	%	1,1%	1,4%	1,4%
Germany	Count	48	712	760
	%	4,9%	19,1%	16,1%
Greece	Count	10	48	58
	%	1,0%	1,3%	1,2%
Hungary	Count	6	8	14
	%	0,6%	0,2%	0,3%
Iceland	Count	16	97	113
	%	1,6%	2,6%	2,4%
Ireland	Count	2	6	8
	%	0,2%	0,2%	0,2%
Italy	Count	2	14	16
	%	0,2%	0,4%	0,3%
Latvia	Count	39	171	210
	%	4,0%	4,6%	4,5%
Liechtenstein	Count	0	1	1
	%	0,0%	0,0%	0,0%
Lithuania	Count	0	2	2
	%	0,0%	0,1%	0,0%
Luxembourg	Count	3	7	10
	%	0,3%	0,2%	0,2%
Malta	Count	4	22	26
	%	0,4%	0,6%	0,6%
Netherlands	Count	42	59	101
	%	4,3%	1,6%	2,1%

Norway	Count	72	243	315
	%	7,4%	6,5%	6,7%
Poland	Count	18	174	192
	%	1,8%	4,7%	4,1%
Portugal	Count	572	1693	2265
	%	58,7%	45,3%	48,1%
Romania	Count	13	99	112
	%	1,3%	2,6%	2,4%
Slovakia	Count	3	4	7
	%	0,3%	0,1%	0,1%
Slovenia	Count	19	37	56
	%	2,0%	1,0%	1,2%
Spain	Count	6	31	37
	%	0,6%	0,8%	0,8%
Sweden	Count	2	4	6
	%	0,2%	0,1%	0,1%
United Kingdom	Count	32	100	132
	%	3,3%	2,7%	2,8%
Total	Count	974	3737	4711
	%	100,0%	100,0%	100,0%

The size of the community where the respondent is practicing provides insight into the environment in which the health professionals operate. 42% of respondents indicated that they work in town or village up to 50.000 inhabitants (Table 22). In contrast to the patients' place of residence, 20% of health professionals work in big cities, with a population more than half a million.

Table 22: Professionals - Size of the community one works in

No of Inhabitants	Frequency	Percentage	Valid Percentage
<1000	105	2,1	2,1
1001-10.000	829	16,4	16,4
10.001-50.000	1223	24,2	24,2
50.001-100.000	611	12,1	12,1
100.001-250.000	804	15,9	15,9
250.001-500.000	458	9,1	9,1
500.001-1.000.000	558	11,0	11,0
>1.000.001	465	9,2	9,2
Total	5053	100,0	100,0

2.2.2 Gender

Of the 5058 respondents, 71% are women (Table 23). This parameter is important as the gender perspective in relation to telehealth service providers has never been analysed according to our knowledge.

Table 23: Professionals - Gender

Gender	Frequency	Percentage	Valid Percentage
Male	1444	28,5	28,6
Female	3609	71,4	71,4
Total	5053	100,0	100,0

The online survey confirmed that nursing and pharmacy professions are traditionally female dominant professions. The gender distribution for the physicians was rather more balanced (Table 24).

Table 24: Gender distribution in the profession

Profession		Gender		Total
		Male	Female	
General practitioner	Count	148	162	310
	%	47,7%	52,3%	100,0%
Specialist Doctor in (please specify):	Count	189	240	429
	%	44,1%	55,9%	100,0%
Nurse	Count	505	1648	2153
	%	23,5%	76,5%	100,0%
Specialist Nurse in (please specify):	Count	325	932	1257
	%	25,9%	74,1%	100,0%
Pharmacist	Count	112	262	374
	%	29,9%	70,1%	100,0%
Other (please specify)	Count	165	365	530
	%	31,1%	68,9%	100,0%
Total	Count	1444	3609	5053
	%	28,6%	71,4%	100,0%

2.2.3 Age

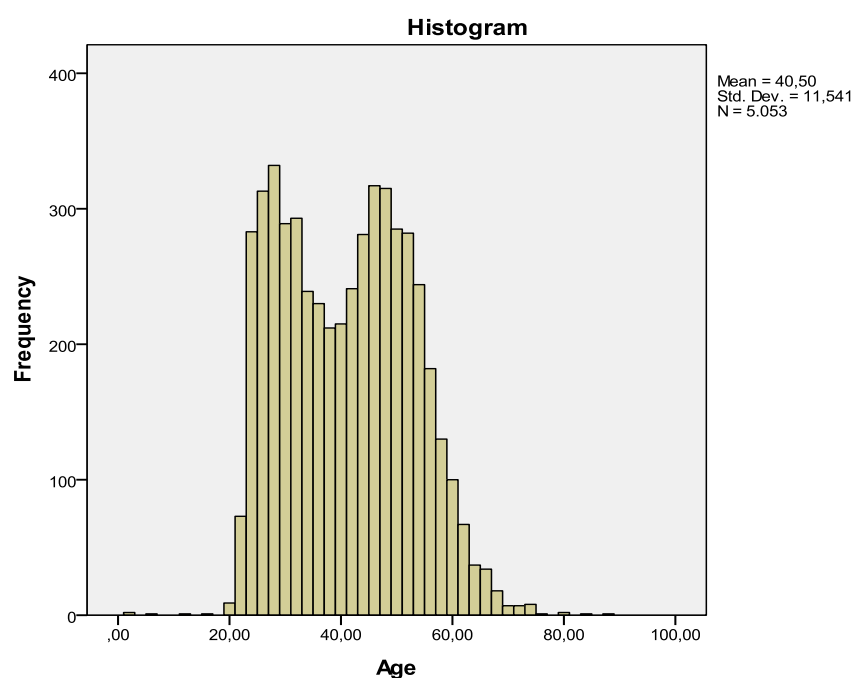
The largest group of health professionals is between 35 and 49 years, followed by 25-34 years (Table 25). The average age of health professionals is 40.5 years old.

Table 25: Professionals - Age

Age	Frequency	Percentage	Valid Percentage
0-24	370	7,3	7,3
25-34	1466	29,0	29,0
35-49	1959	38,8	38,8
50-64	1179	23,3	23,3
<65	79	1,6	1,6
Total	5053	100,0	100,0

When looking at the histogram of the age of professionals (Figure 5) there is an important gap occurring in the age group 35-45.

Figure 5: Professionals - Distribution according to age



2.2.4 Distribution by Profession

Nurses proved to be the most active group of health professionals in responding to the questionnaire, particularly in Portugal and Germany (Table 27). 67% of the health professional respondents are nurses, 15% are physicians, 7% are pharmacists and 10% can be categorised as “other” (Table 26). Of the 520 respondents which replied ‘other’, the following groupings are identified: dentists, administrative officers, managers, physiotherapists, psychologists, etc. As we have not the ambition to dig into detailed findings for each profession separately, we are inclusive and formulate findings for the ‘health professionals’. Only in those cases where extreme findings come up front, we would look into each profession if needed.

Table 26: Professionals - Profession

Profession	Frequency	Percentage	Valid Percentage
General practitioner	310	6,1	6,1
Specialist Doctor in (please specify):	429	8,5	8,5
Nurse	2153	42,6	42,6
Specialist Nurse in (please specify):	1257	24,9	24,9
Pharmacist	374	7,4	7,4
Other (please specify)	530	10,5	10,5
Total	5053	100,0	100,0

Figure 6: Distribution by profession

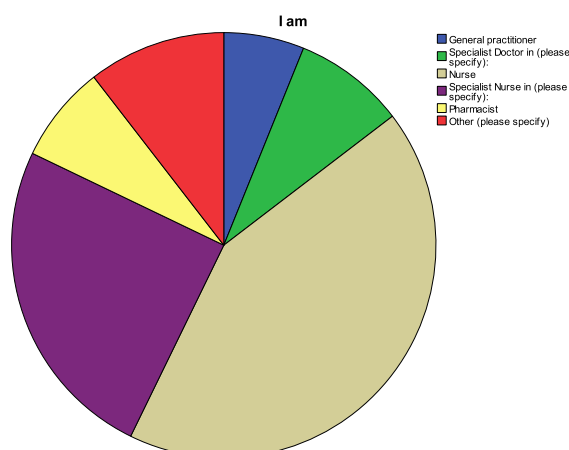


Table 27: Professionals - Profession by country

	General practitioner		Specialist Doctor		Nurse		Specialist Nurse		Pharmacist		Other	
	N	%	n	%	n	%	n	%	n	%	n	%
Austria	1	0,3%	0	0,0%	12	0,6%	9	0,7%	2	0,5%	5	0,9%
Belgium	1	0,3%	2	0,5%	1	0,0%	0	0,0%	17	4,5%	5	0,9%
Bulgaria	1	0,3%	4	0,9%	1	0,0%	0	0,0%	2	0,5%	0	0,0%
Croatia	3	1,0%	0	0,0%	0	0,0%	0	0,0%	1	0,3%	0	0,0%
Cyprus	0	0,0%	4	0,9%	18	0,8%	9	0,7%	1	0,3%	4	0,8%
Czech Rep	0	0,0%	0	0,0%	2	0,1%	1	0,1%	2	0,5%	1	0,2%
Denmark	13	4,2%	31	7,2%	0	0,0%	0	0,0%	18	4,8%	11	2,1%
Estonia	0	0,0%	0	0,0%	1	0,0%	1	0,1%	0	0,0%	0	0,0%
Finland	0	0,0%	1	0,2%	21	1,0%	11	0,9%	6	1,6%	3	0,6%
France	0	0,0%	2	0,5%	7	0,3%	2	0,2%	54	14,4%	5	0,9%
Germany	6	1,9%	5	1,2%	374	17,4%	215	17,1%	3	0,8%	214	40,4%
Greece	4	1,3%	3	0,7%	30	1,4%	5	0,4%	7	1,9%	15	2,8%
Hungary	2	0,6%	8	1,9%	2	0,1%	0	0,0%	0	0,0%	3	0,6%
Iceland	0	0,0%	0	0,0%	101	4,7%	34	2,7%	0	0,0%	4	0,8%
Ireland	0	0,0%	2	0,5%	2	0,1%	3	0,2%	1	0,3%	2	0,4%
Italy	0	0,0%	5	1,2%	1	0,0%	1	0,1%	6	1,6%	3	0,6%
Latvia	71	22,9%	129	30,1%	1	0,0%	1	0,1%	0	0,0%	17	3,2%
Liechtenstein	0	0,0%	0	0,0%	0	0,0%	1	0,1%	0	0,0%	0	0,0%
Lithuania	1	0,3%	1	0,2%	1	0,0%	0	0,0%	1	0,3%	0	0,0%
Luxembourg	1	0,3%	0	0,0%	2	0,1%	4	0,3%	0	0,0%	5	0,9%
Malta	1	0,3%	6	1,4%	4	0,2%	3	0,2%	1	0,3%	15	2,8%
Netherlands	25	8,1%	31	7,2%	13	0,6%	5	0,4%	1	0,3%	33	6,2%
Norway	35	11,3%	27	6,3%	19	0,9%	22	1,8%	203	54,3%	46	8,7%
Poland	3	1,0%	13	3,0%	112	5,2%	60	4,8%	5	1,3%	19	3,6%
Portugal	11	3,5%	34	7,9%	1384	64,3%	856	68,1%	24	6,4%	66	12,5%
Romania	35	11,3%	78	18,2%	5	0,2%	1	0,1%	1	0,3%	8	1,5%
Slovakia	0	0,0%	2	0,5%	3	0,1%	2	0,2%	0	0,0%	0	0,0%
Slovenia	10	3,2%	30	7,0%	3	0,1%	2	0,2%	3	0,8%	9	1,7%
Spain	1	0,3%	6	1,4%	17	0,8%	3	0,2%	4	1,1%	13	2,5%
Sweden	3	1,0%	1	0,2%	1	0,0%	0	0,0%	0	0,0%	3	0,6%
UK	82	26,5%	4	0,9%	15	0,7%	6	0,5%	11	2,9%	21	4,0%

2.2.5 Conclusions - Demographic data of Health Professionals

Before analysing the responses to the survey it is important to understand what type of health professionals' population the survey had captured. Based on the analysis of general questions we can conclude that:

- All 27 EU Member States are represented in the survey as well as Croatia, Iceland, Lichtenstein and Norway.
- More female nurses and pharmacists responded to the CoT survey, while the response rate of female and male physicians is more balanced and close to an even distribution. Therefore, relationships between perceptions of telehealth service provision and gender will be more closely analysed.
- The 35-49 years age group is dominant with an average age of 40.5 years.
- We have observed a gap of respondents in the age group 35-45 years, which confirms the challenges of the future health workforce and the ageing workforce.
- 20% of health professionals were working in cities with above 500.000 inhabitants.
- The largest group of health professionals that responded to the survey were nurses (67%), followed by physicians 13% and pharmacists 7%.

3. Users' experience with telehealth

This section presents the results and findings relating to the second part of the questionnaire. As mentioned in paragraph 3 (Methodology) this part consisted of a set of questions aimed at exploring the use of telehealth services among the respondents.

The results of the patient questionnaire are presented in paragraph 3.1, while the results of the health professional questionnaire are reported in paragraph 3.2.

3.1 Patients

3.1.1 Patients' Experience with Telehealth

3.1.1.1 How familiar are you with telehealth services? (Q12)

17% of the respondents are familiar with telehealth services (Table 28) whereas, 83% are not familiar. The population captured by the survey consists mainly of patients that are not familiar with telehealth services.

Table 28: Patients - How familiar are you with telehealth services? (Q12)

		Frequency	Percentage	Valid Percentage
Valid	VERY FAMILIAR	62	3,8	3,9
	MODERATELY FAMILIAR	215	13,1	13,4
	NOT VERY FAMILIAR	469	28,5	29,3
	NOT FAMILIAR	853	51,8	53,3
	Total	1599	97,1	100,0
Missing	System	47	2,9	
Total		1646	100,0	

3.1.1.2 Do you know whether in your area there exist telehealth services? (Q13)

As we have a clear view on what the closest health facilities to the patients (of which majority lives in small cities) are, only 14% know of the existence of telehealth services in their area (Table 29).

Table 29: Do you know whether in your area there exist telehealth services (Q13)

		Frequency	Percentage	Valid Percentage
Valid	YES there are telehealth services	110	6,7	6,9
	YES there are telehealth services but I am not using any of	120	7,3	7,5
	NO, there are no telehealth services in my area/region	411	25,0	25,7
	I don't know	958	58,2	59,9
	Total	1599	97,1	100,0
Missing	System	47	2,9	
Total		1646	100,0	

3.1.1.3 Have you ever received health services with the support of telehealth? (Q16)

When it comes to actually using telehealth services, 6% of the respondents have ever used telehealth services (

Table 30).

Table 30: Have you ever received health services with the support of telehealth? (Q16)

		Frequency	Percentage	Valid Percentage
Valid	Yes	92	5,6	5,8
	No	1500	91,1	94,2
	Total	1592	96,7	100,0
Missing	System	54	3,3	
Total		1646	100,0	

3.1.1.4 Were you involved in testing or setting up the telehealth service? (Q14)

Out of 92 telehealth users, 15 (16%) confirmed that they were involved in testing or setting up telehealth services locally (Table 31). Naturally, the greatest majority of respondents who were non-users (97.7%) were not engaged in setting up or testing telehealth services.

Table 31: Patients - Where you involved in testing or setting up of telehealth service? (Q14)

		Have you ever received health services with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	15	16,3%	34	2,3%
	No	77	83,7%	1466	97,7%

3.1.1.5 Have you followed any training on telehealth in the last three years? (Q15)

When it comes to training in telehealth, results are similar to those of patient involvement in setting up these services. Only 13% of telehealth users have received training in the last three years (Table 32). This shows that not only it appears that involvement of patients in setting up telehealth services is low but there is very little training offered to those using telehealth services.

Table 32: Patients - Have you followed any training on telehealth in the last three years? (Q15)

		Have you ever received health services with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Have you followed any training on telehealth in the last three years?	Yes	12	13,0%	31	2,1%
	No	80	87,0%	1469	97,9%

3.1.1.6 What type of telehealth service have you used? (Q17)

When it comes to the analysis of the type of telehealth services, it is impossible to group them as the different languages inhibits further groupings.

3.1.1.7 For how long have you received health service/s with the support of telehealth? (Q18)

Out of the 92 patients who used telehealth services, 77 indicated the length of their use (Table 33). This group appears to be very heterogeneous, as 24% used telehealth for up to one month, while 21% used it for one to two years and 25% more than three years.

Table 33: For how long have you received health services with the support of telehealth? (Q18)

For how long have you received health service/s with the support of telehealth?	Count	N %
>1 month	22	23,9%
1-5 months	3	3,3%

6 months -1 year	10	10,9%
1-2 years	19	20,7%
3 years or more	23	25,0%

3.1.1.8 How would you rate your experience with telehealth? (Q19)

Out of the 92 patients who declared they are using telehealth services, 70% rate telehealth services positive, 15% rate their experience neither positive nor negative, while 4 respondents feel it was a negative experience overall (Table 34).

Table 34: Patients - How would you rate your experience with telehealth? (Q19)

How would you rate your experience with telehealth?	Count	%
VERY POSITIVE	23	25,0%
POSITIVE	41	44,6%
NEITHER POSITIVE OR NEGATIVE	14	15,2%
NEGATIVE	4	4,3%
VERY NEGATIVE	0	0,0%

3.1.1.9 How did you know about this service? (Q20)

When asked about the source of information about telehealth services (Table 35) 49% of respondents replied that they received this information from the media (local, press, TV, Internet). The same share of patients, namely 49%, was informed by a health professional (doctor 34%, nurse 8%, and pharmacist 8%). The healthcare professional group that is most often named as source of information about telehealth services are the physicians (34%).

Table 35: Patients - How did you know about this service?

How did you know about this service?	Count	%
Local press	9	9,8%
Media (press, local TV, internet, radio)	36	39,1%
My doctor(s)	31	33,7%
My nurse(s)	7	7,6%
My pharmacist(s)	7	7,6%
Friends and family	13	14,1%
Other patients using that service	4	4,3%

3.1.1.10 Are you still using this service? (Q21)

Out of the 92 patients who declared using telehealth services (Table 36), 88 patients responded to this question, of which 61% were still using these services while 30% stopped using telehealth.

Table 36: Patients - Are you still using this service?

Are you still using this service?	Count	%
Yes	56	60,9%
No	28	30,4%

3.1.1.11 Why did you stop using telehealth services? (Q22)

1508 non-user patients provided reasons why they were not using telehealth services. 702 patients are of the opinion that there are no suitable telehealth services in their region, while 135 do not see any benefits of using telehealth services at all. Interestingly, 23 patients were recommended not to use them anymore. 648 patients had 'other' reasons. When exploring the data, we found no significant correlation between 'age' and 'stopping using telehealth services'.

Table 37: Why did you stop using telehealth services?

	Why did you stop using telehealth services?			
	Yes		No	
	Count	N%	Count	N%
There are not suitable telehealth services available in my region	1	1,1%	702	46,8%
I don't see any benefits of using telehealth	0	0,0%	135	9,0%
I was recommended not to use it	0	0,0%	23	1,5%
Other (please specify)	2	2,2%	648	43,2%

3.1.2 Summary of Patients' Experiences

Before exploring relationships between variables and data sets, the patient experiences with telehealth indicate that:

- 17% of the respondents are familiar with telehealth services while 83% of the patients are not familiar.
- Patients are not using telehealth services because they are not available to them or they are not aware of their existence.
- The patient-users group consist of 6%, or 92 patients of the sample.
- Out of the 92 telehealth users, 15 patients were engaged in testing or setting up telehealth services.
- The participation of patients in setting up and testing telehealth services is extremely low (15 out of 92 user patients).
- Very little training is offered to those using telehealth services (13% of 92 users).
- 24% used telehealth for up to a month, while 21% used it for one to two years and 25% more than three years.
- 70% rate telehealth services positive, 15% rate their experience neither positive nor negative, while four respondents feel it was a negative experience over all.
- Both media and health professionals have played a central role in informing the respondents on telehealth services.
- Out of the 1508 non-user patients of telehealth services, 702 patients are of the opinion that there are no suitable telehealth services in their region, while 135 do not see any benefits of using telehealth services at all.

3.2 Healthcare Professionals

3.2.1 Professionals' Experience with telehealth

3.2.1.1 How familiar are you with telehealth services? (Q7)

The profile of the providers in relation to how familiar they are with telehealth services is expressed in the table below (Table 38). 34% of the health professionals indicated that they are familiar with providing telehealth services. In contrast, over 3090 health professionals are not very or not at all familiar with telehealth services. So, our sample consists mostly of non-user health professionals.

When related to 'age', there is no significant relationship between 'being familiar' and 'age', although we observe in the data that older professionals are slightly more familiar with telehealth

services (Table 39).

Table 38: Professionals - How familiar are you with telehealth services (Q7)?

		Frequency	Percentage	Valid Percentage
Valid	Very familiar	313	6,2	6,6
	Moderately familiar	1308	25,9	27,8
	Not very familiar	1844	36,5	39,1
	Not familiar	1246	24,6	26,4
	Total	4711	93,1	100,0
Missing	System	342	6,9	
Total		5058	100,0	

Table 39: Professionals - Familiarity with telehealth and age distribution

How familiar are you with telehealth services?		Age					Total	
		0-24	25-34	35-49	50-64	<65		
Very familiar	Count	12	81	118	96	6	313	
	%	3,5%	5,9%	6,4%	8,8%	8,7%	6,6%	
Moderately familiar	Count	107	386	499	294	22	1308	
	%	31,4%	28,1%	27,2%	26,9%	31,9%	27,8%	
Not very familiar	Count	136	591	723	373	21	1844	
	%	39,9%	43,0%	39,4%	34,2%	30,4%	39,1%	
Not familiar	Count	86	316	496	328	20	1246	
	%	25,2%	23,0%	27,0%	30,1%	29,0%	26,4%	
Total		Count	341	1374	1836	1091	69	4711
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

3.2.1.2 Are there telehealth services at your work place? (Q8)

36% of health professionals have telehealth services available in their working environment, while 50% do not. Interesting to note that 10% of respondents did not know if telehealth services existed in their workplace (Table 40). We can sum up that the majority of the participating health professionals do not have telehealth services in their workplace.

Table 40: Professionals - Are there telehealth services at your work place?

Are there telehealth services at your work place?		Frequency	Percentage	Valid Percentage
Valid	YES, there are telehealth services	927	18,3	19,7
	YES, there are telehealth services but not for the health service I provide	781	15,4	16,6
	NO, there are no telehealth services	2501	49,4	53,1
	I don't know	502	9,9	10,7
	Total	4711	93,1	100,0
Missing	System	347	6,9	
Total		5058	100,0	

Additionally, only 24% of pharmacists indicated that telehealth services are available at the workplace, and 11% of them identified them as not suitable (Table 41). When it comes to the nursing profession, results are quite positive as there is an equal distribution between 'being available' and 'not available'.

Table 41: Professionals - Are there telehealth services at ones work place by profession.

	General practitioner		Specialist Doctor		Nurse		Specialist Nurse		Pharmacist		Other	
	N	%	n	%	n	%	n	%	N	%	n	%
YES, there are telehealth services	70	22,6%	116	27,0%	348	16,2%	257	20,4%	47	12,6%	89	16,8%
YES, but not for the health service I provide	18	5,8%	72	16,8%	353	16,4%	246	19,6%	42	11,2%	50	9,4%
NO, there are no telehealth services	186	60,0%	186	43,4%	1093	50,8%	596	47,4%	176	47,1%	264	49,8%
I don't know	13	4,2%	34	7,9%	215	10,0%	98	7,8%	64	17,1%	78	14,7%

3.2.1.3 Have you ever provided a health service with the support of telehealth? (Q11)

Almost 20% of the respondents provided health services with the support of telehealth (Table 42).

Table 42: Professionals - Have you ever provided a health service with the support of telehealth

Valid		Frequency	Percentage	Valid Percentage
		Yes	974	19,3
Valid	No	3737	73,9	79,3
	Total	4711	93,1	100,0
	Missing	System	347	6,9
Total		5058	100,0	

When analysing telehealth service provision by different health professionals (Table 43), physicians are the most likely to provide services via telehealth (29% for specialist doctors, followed by GPs, 24%). As observed from the data, pharmacists are the group of health professionals least likely to be engaged in telehealth (9,4%).

Table 43: Professionals - Telehealth service provision by profession

	Have you ever provided a health service with the support of telehealth?			
	Yes		No	
	Count	%	Count	%
General practitioner	75	24,2%	212	68,4%
Specialist Doctor	124	28,9%	284	66,2%
Nurse	402	18,7%	1607	74,6%
Specialist Nurse	265	21,1%	932	74,1%
Pharmacist	35	9,4%	294	78,6%
Other	73	13,8%	408	77,0%

3.2.1.4 What type of health service/s with the support of telehealth have you provided? (Q12)

The health services most often provided by health professionals through telehealth where 'analysing clinical data' (50%), 'health promotion and education' (35%) and 'monitoring vital signs' (27%) (Table 44)Error! Reference source not found..

Table 44: Professionals - What type of health service/s with the support of telehealth have you provided? (Q12)

What type of health service/s with the support of telehealth have you provided?	Count	%
Providing health assistance by using teleconference or instant messaging	222	22,8%
Analysis of clinical data (cardiogram, radiological data, et	491	50,4%
Telemonitoring of the vital parameters of the patients	261	26,8%
Health promotion and educational health support through ICT	339	34,8%
Other	191	19,6%

General practitioners most often use telehealth to analyse clinical data (36%) and provide health assistance (22%). Similarly, specialist doctors in 35% of cases analysed clinical data and provided health assistance (23%) when using telehealth. Nurses (36%) and specialist nurses (30%) as well as doctors most often analysed clinical data when using telehealth and tele-monitored vital parameters of patients, while specialist nurses were more often engaged in health promotion and education (25%). Pharmacists used telehealth for health promotion and education in 43% of cases.

Table 45: Professionals - What type of health service by profession

	Providing health assistance by using teleconference or instant messages		Analysis of clinical data (cardiogram, radiological data, etc.)		Telemonitoring of the vital parameters of the patients		Health promotion and educational health support through ICT		Other	
	Count	%	Count	%	Count	%	Count	%	Count	%
General practitioner	29	22,3%	47	36,2%	16	12,3%	26	20,0%	12	9,2%
Specialist Doctor	49	22,9%	75	34,7%	27	12,5%	42	19,4%	21	9,7%
Nurse	59	9,8%	217	36,1%	127	21,1%	117	19,5%	81	13,5%
Specialist Nurse	49	12,5%	118	30,1%	76	19,4%	99	25,3%	50	12,7%
Pharmacist	8	18,2%	5	11,4%	2	4,5%	19	43,2%	10	22,7%
Other	28	22,8%	29	23,6%	13	10,6%	36	29,3%	17	13,8%

3.2.1.5 Were you involved in testing or setting up the telehealth service? (Q9)

Contrary to the findings of patients' responses, 43% of health professionals who use or have used telehealth services were involved in testing and setting up these services (Table 46). Additionally, 4% of the non-users were also involved in setting up telehealth services. The involvement of different health professions in setting up and testing telehealth services show a very similar distribution (Table 47, Table 48, Table 49, Table 50 and Table 51). However, the physicians are the group of healthcare professionals involved most in testing or setting up telehealth services.

Table 46: Professionals - Where you involved in testing or setting up the telehealth services? (Q9)

		Have you ever provided a health service with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	421	43,2%	145	3,9%
	No	553	56,8%	3592	96,1%

Table 47: GP - Where you involved in testing or setting up the telehealth services? (Q9)

		Have you ever provided a health service with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	37	49,3%	10	4,7%
	No	38	50,7%	202	95,3%

Table 48: Specialist doctor - Where you involved in testing or setting up the telehealth services? (Q9)

		Have you ever provided a health service with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	61	49,2%	19	6,7%
	No	63	50,8%	265	93,3%

Table 49: Nurse - Where you involved in testing or setting up the telehealth services? (Q9)

		Have you ever provided a health service with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	140	34,8%	43	2,7%
	No	262	65,2%	1564	97,3%

Table 50: Specialist Nurse - Where you involved in testing or setting up the telehealth services? (Q9)

		Have you ever provided a health service with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	129	48,7%	37	4,0%
	No	136	51,3%	895	96,0%

Table 51: Pharmacist - Where you involved in testing or setting up the telehealth services? (Q9)

		Have you ever provided a health service with the support of telehealth?			
		Yes		No	
		Count	%	Count	%
Were you involved in testing or setting up the telehealth service?	Yes	14	40,0%	11	3,7%
	No	21	60,0%	283	96,3%

3.2.1.6 Have you followed any training on telehealth in the last three years? (Q10)

When asked whether they have ever followed any training on telehealth in the past three years, 44% of respondents answered positively (Table 52). Although this is a higher number compared to the training provided to patients using telehealth, it is still less than a half of the health professional users.

Additionally, 5% of health professionals that are non-users are engaged in trainings on telehealth. When looking at the training of the different health professionals captured in the survey (Table 53), specialist nurses and general practitioners are the professional groups that received training in telehealth most often, while only 7% of responding pharmacists were engaged in training in telehealth in the past three years.

Table 52: Professionals - Have you followed any training on telehealth in the last three years? (Q10)

		Have you followed any training on telehealth in the last three years?			
		Yes		No	
		Count	%	Count	%
Have you ever provided a health service with the support of telehealth?	Yes	428	43,9%	546	56,1%
	No	182	4,9%	3555	95,1%

Table 53: Have you followed any training on telehealth in the last three years? (By profession)

		Yes		No	
		Count	%	Count	%
	General practitioner	42	13,5%	245	79,0%
	Specialist Doctor in	53	12,4%	355	82,8%
	Nurse	247	11,5%	1762	81,8%
	Specialist Nurse	183	14,6%	1014	80,7%
	Pharmacist	27	7,2%	302	80,7%

		Yes		No	
		Count	%	Count	%
	General practitioner	42	13,5%	245	79,0%
	Specialist Doctor in	53	12,4%	355	82,8%
	Nurse	247	11,5%	1762	81,8%
	Specialist Nurse	183	14,6%	1014	80,7%
	Pharmacist	27	7,2%	302	80,7%
	Other	58	10,9%	423	79,8%

3.2.1.7 For how long have you provided health service/s with the support of telehealth? (Q13)

Out of the 974 health professional respondents who provided health services with the support of telehealth, almost half of the healthcare professionals (48,5%) were providing telehealth services for three years and more (Table 54). This is a very promising finding.

Table 54: Professionals - For how long have you provided health services with the support of telehealth? (Q11)

		Frequency	Percentage	Valid Percentage
Valid	<1 month	69	7,1	7,5
	1-5 months	87	8,9	9,4
	6 months -1 year	97	10,0	10,5
	1-2 years	223	22,9	24,1
	3 years or more	448	46,0	48,5
	Total	924	94,9	100,0
Missing	System	50	5,1	
Total		974	100,0	

3.2.1.8 How would you rate your experience with telehealth? (Q14)

The health professionals' experience is rated as positive in 82% of the cases (Table 55)**Error! Reference source not found.** Nevertheless, there is no significant difference in relation to the different health professions, nor was any significant difference found according to gender.

Table 55: Professionals - How would you rate your experience with telehealth? (Q14)

		Frequency	Percentage	Valid Percentage
Valid	Very positive	222	22,8	24,0
	Positive	537	55,1	58,1
	Neither positive nor negative	143	14,7	15,5
	Negative	16	1,6	1,7
	Very negative	6	0,6	0,6
	Total	924	94,9	100,0
Missing	System	50	5,1	
Total		974	100,0	

3.2.1.9 Are you still providing health service/s with the support of telehealth? (Q15)

When it comes to the question pertaining to whether the health professional is still providing health services with the support of telehealth, out of the 924 respondents, 73% provided a positive answer.

Table 56: Professionals - Are you still providing health services with the support of telehealth? (Q15)

		Frequency	Percentage	Valid Percentage
Valid	Yes	673	69,1	72,8
	No	251	25,8	27,2
	Total	924	94,9	100,0

Missing	System	50	5,1	
Total		974	100,0	

We observe a very similar decline according to the group of health professionals in the use of telehealth. Nurses registered the highest decline, namely 28% (Table 57), while general practitioners using telehealth declined by 13.3%.

Table 57: Professionals - Decline of use of telehealth services by profession

	Are you still providing health service/s with the support of telehealth?			
	Yes		No	
	Count	%	Count	%
General practitioner	64	85,3%	10	13,3%
Specialist Doctor in (please specify):	87	70,2%	30	24,2%
Nurse	266	66,2%	113	28,1%
Specialist Nurse in (please specify):	183	69,1%	68	25,7%
Pharmacist	26	74,3%	7	20,0%
Other (please specify)	47	64,4%	23	31,5%

3.2.1.10 Why haven't you ever provided a health service with the support of telehealth? (More than one answer is possible) (Q16)

3737 health professionals who responded to Q11 with a "No" responded also to this question which elaborates on the reasons why they have not delivered healthcare through telehealth. They indicated that the main reasons for them not to provide telehealth services is (1) that there are no telehealth services available at their workplace (80%), (2) the benefits are not clear (4,5%), (3) reimbursement is not sufficient (8%), and 15% provided other reasons (Table 588).

Table 58: Professionals - Why did you stop providing health services using telehealth? (Non-users)

	Count	%
There are no telehealth services available at my place of work	2982	79,8%
I do not see major benefits in using telehealth	170	4,5%
The use of telehealth services is not (sufficiently) reimbursed	295	7,9%
Other	554	14,8%

3.2.2 Summary of Healthcare Professionals' Experiences

Before exploring relationships between variables and data sets, the health professional experiences with telehealth indicate that:

- 34% of the health professionals in the sample are familiar with providing telehealth services.
- 36% of the responding health professionals have telehealth services available in their working environment.
- 20% of the respondents provided health services with the support of telehealth.
- The health services most often provided by health professionals are analysing clinical data (50%), health promotion and education (35%) and monitoring vital signs (27%).
- Contrarily to the findings of patients' responses, 43% of health professionals who have used or use telehealth services were involved in testing and setting up these services.
- 44% of the user health professionals followed training on telehealth in the past three years. 5% of health professionals that are non-users, are engaged in training on telehealth.

- 48,5% of the health professionals were providing telehealth services for 3 years and more.
- Health professionals rate their experience with telehealth positive in 82%.
- Out of the 924 health professional users, 73% are still providing these services, suggesting that 27% declined from using telehealth.
- 2982 respondents who never used telehealth in the provision of health services, indicated that the main reasons for not providing telehealth services is (1) that there are no telehealth services available (75%), (2) the benefits are not clear (4%), (3) there is insufficient reimbursement (7%), and 14% provided other reasons.

4. Presentation of Findings

This section presents the results and findings relating to the third part of the questionnaire. As mentioned in paragraph 3 (Methodology) this part consisted of statements aiming to explore the experience and/or perceptions among users and non-users of telehealth services on a number of issues identified in the literature review, e.g. confidentiality, accuracy, quality of care, etc.

The findings of the patients' questionnaire are presented in paragraph 4.1, while the findings of the health professionals' questionnaire are described in paragraph 4.2.

4.1 Patients' Agreement with the Statements

All the statements were rated by respondents from 'strongly disagree' (1) to 'strongly agree' (5) with reference to their personal experience or perception in relation to telehealth. Within this set of statements, we have identified 'themes' which will be further analysed: 'responsibility', 'willingness to use telehealth', 'confidentiality' and 'privacy', 'safety', 'benefits', 'the use' and 'communication'.

4.1.1 Overview

Table 59: Overview of patients' responses to statements

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree
Generally speaking, I am willing to play a more active role in managing my health condition	61,1%	30,6%	6,5%	1,1%	0,7%
Telehealth affects negatively the confidentiality of data	3,6%	14,0%	49,1%	22,6%	10,7%
Telehealth improves access to healthcare particularly for patients living in underserved areas	36,0%	39,3%	20,0%	2,7%	2,0%
Telehealth improves access to health services for disadvantaged patients	29,1%	37,9%	23,0%	5,9%	4,1%
Telehealth services are easy to use	12,6%	26,3%	52,0%	7,1%	2,0%
Telehealth is as safe as conventional face-to-face health services	7,3%	23,8%	47,4%	16,3%	5,1%
Telehealth affects negatively the communication between patients and health professionals	4,9%	17,0%	45,8%	24,0%	8,3%
Telehealth consultations with health professionals are impersonal	10,2%	28,2%	40,4%	17,0%	4,3%
Telehealth services affects negatively my privacy	3,5%	11,0%	49,0%	24,9%	11,7%
When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions	16,0%	37,8%	32,7%	11,3%	2,2%
Telehealth is a valid complement to conventional healthcare services	27,1%	44,7%	23,9%	2,8%	1,5%
Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services	4,1%	20,7%	42,0%	25,8%	7,4%
Telehealth helps to increase the quality of health services	16,7%	41,9%	32,2%	6,6%	2,7%
The addition of telehealth to conventional health services improves my adherence to treatment and care	15,5%	36,4%	38,8%	6,3%	3,0%
Telehealth helps me stay more regularly in touch with health professionals	19,3%	41,7%	32,2%	4,5%	2,2%
My health status improves with the addition of telehealth to conventional health services	7,8%	12,0%	67,1%	6,2%	6,9%
Telehealth involves too much responsibility on my shoulders for managing my health condition	2,8%	15,3%	56,4%	16,7%	8,7%
Telehealth fits into my daily life	11,4%	27,0%	53,1%	4,5%	4,0%

Telehealth helps me save money I spend on healthcare (less travel, less in-patient visits, less hours off-work, etc.)	%	20,0%	33,7%	39,7%	3,9%	2,7%
Using telehealth my family/relatives are less concerned about my health status	%	8,0%	19,3%	58,3%	9,2%	5,2%
I am willing to use telehealth services in the short to medium term	%	20,3%	41,3%	31,5%	4,0%	2,9%
Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate.	%	46,0%	30,5%	20,6%	1,8%	1,2%
The addition of telehealth to conventional health services improves my quality of life	%	17,5%	32,9%	43,7%	3,3%	2,5%
Telehealth helps me improve my knowledge of my health condition	%	17,0%	39,4%	37,1%	3,8%	2,8%
I am concerned about the expertise of the professionals who monitor my health status through telehealth	%	7,9%	22,0%	48,7%	17,4%	4,0%
I am ready to pay more for my health services if telehealth leads to other benefits	%	5,5%	19,3%	42,0%	18,7%	14,5%
I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits	%	7,0%	24,0%	36,6%	14,0%	18,4%

4.1.2 Detailed analysis

4.1.2.1 Patients taking additional responsibility for managing their condition

A certain shift of responsibility from health professionals to patients is often inherent in the introduction of telehealth services. To ensure acceptance of telehealth among patients it is, therefore, important to ensure that they are willing, and more importantly, ready, i.e. they are equipped with the skillset required, to take up more responsibilities for the management of the condition. If one fails to ensure this chances are that this could turn out to be a barrier to telehealth adoption. This is also, obviously, a major ethical issue that needs to be thoroughly assessed before making a decision as to whether telehealth could be the best option for a patient.

To this end patients were asked to provide their view as to whether they would be willing to play a more active role in managing their health condition, and whether they think telehealth involves too much responsibility for the patient for managing his/her health condition.

Concerning this statement, it is clear that the majority of patients, 92%, want to play a more active role in managing their own health condition (Table 60). 48% of the user respondents indicated they would be ready to handle the additional responsibilities presented by the use of telehealth in managing their condition (Table 61). By contrast, 24% of the telehealth user respondents and 18% of non-users think that telehealth involves too much responsibility on the patients' shoulders (Table 62).

Table 60: Patients - Willingness to play more active role in managing one's health condition (Q23)

Willingness to play more active role in managing one's health condition		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	796	48,4	61,1
	Moderately agree	399	24,2	30,6
	Neither agree nor disagree	85	5,2	6,5
	Moderately disagree	14	0,9	1,1
	Strongly disagree	9	0,5	0,7
	Total	1303	79,2	100,0
Missing	System	343	20,8	
Total		1646	100,0	

Table 61: Patients/Users - Telehealth involves too much responsibility on my shoulders for managing my

health condition (Q38)

Telehealth involves too much responsibility on my shoulders for managing my health condition		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	4	4,3	5,3
	Moderately agree	14	15,2	18,7
	Neither agree nor disagree	21	22,8	28,0
	Moderately disagree	21	22,8	28,0
	Strongly disagree	15	16,3	20,0
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 62: Patients/Non-users - Telehealth involves too much responsibility on my shoulders for managing my health condition (Q38)

Telehealth involves too much responsibility on my shoulders for managing my health condition		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	33	2,2	2,7
	Moderately agree	186	12,4	15,2
	Neither agree nor disagree	713	47,5	58,2
	Moderately disagree	195	13,0	15,9
	Strongly disagree	99	6,6	8,1
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.2 Willingness to use telehealth

In our survey we asked patients whether they would be willing to use telehealth in the short to medium term (Table 63). 62% of the patients who responded to the survey declared they would be willing to use telehealth in the short and medium term, which represents 80% of telehealth users and 60% of non-users (p=0,001). Interestingly, from the side of the non-users, we have significant results. Only 7% of non-users and 4% of users declared they would not be willing to use telehealth in the future. We also explored these findings in relation to whether the respondent is a person suffering from a chronic condition, but we did not find any significant relationship between these two variables.

Table 63: Patients - I am willing to use telehealth services in the short to medium term – Q42

I am willing to use telehealth services in the short to medium term		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	265	16,1	20,3
	Moderately agree	538	32,7	41,3
	Neither agree nor disagree	410	24,9	31,5
	Moderately disagree	52	3,2	4,0
	Strongly disagree	38	2,3	2,9
	Total	1303	79,2	100,0
Missing	System	343	20,8	
Total		1646	100,0	

4.1.2.3 Privacy and confidentiality

Questions included under this domain were aimed at assessing how the patients perceive telehealth in relations to a number of ethical issues such as privacy and confidentiality. These elements are commonly regarded as major barriers to telehealth adoption among users, as confirmed by the findings of our literature review. Before presenting the answers to these key aspects some

definitions are needed. For the purpose of this study privacy refers to persons and to their interest in controlling the access of others to themselves. Privacy is therefore the right to be free from external interference. The continuous monitoring nature inherent in many telehealth services may prove to be an infringement of patients’ rights to privacy. When it comes to telehealth the notion of privacy is therefore often associated with the concept of intrusiveness.

Confidentiality is an extension of the concept of privacy. It refers to data (some identifiable information about a person) and to agreements about how data are to be handled in keeping with subjects' interest in controlling the access of others to information about themselves. As health data are considered under the EU legislation as constituting a particularly sensitive category of data, the issue of confidentiality is particularly relevant in telehealth.

4.1.2.3.1 Confidentiality

Moving to the question pertaining to the negative implications of telehealth for the confidentiality of data (Table 64), 49% of the respondents do not have an opinion on whether telehealth negatively affects the confidentiality of data, while 33% does not agree with this statement.

Table 64: Patients - Telehealth affects negatively the confidentiality of data

Telehealth affects negatively the confidentiality of data		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	47	2,9	3,6
	Moderately agree	182	11,1	14,0
	Neither agree nor disagree	640	38,9	49,1
	Moderately disagree	294	17,9	22,6
	Strongly disagree	140	8,5	10,7
	Total	1303	79,2	100,0
Missing	System	343	20,8	
Total		1646	100,0	

When comparing the responses to this question from the ‘users’ (Table 65) with the ‘non-users’ (Table 66), more users have expressed their opinion and only in 29% of cases did they select the ‘neither agree nor disagree’ response compared to 50% of the non-users. Additionally, 53% of users disagreed with this statement compared to 32% of non-users who disagreed.

Table 65: Patients/Users - Telehealth affects negatively the confidentiality of data

Telehealth affects negatively the confidentiality of data		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	5	5,4	6,7
	Moderately agree	8	8,7	10,7
	Neither agree nor disagree	22	23,9	29,3
	Moderately disagree	21	22,8	28,0
	Strongly disagree	19	20,7	25,3
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 66: Patients/Non-users- Telehealth affects negatively the confidentiality of data

Telehealth affects negatively the confidentiality of data		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	42	2,8	3,4
	Moderately agree	174	11,6	14,2
	Neither agree nor disagree	617	41,1	50,3
	Moderately disagree	273	18,2	22,3
	Strongly disagree	120	8,0	9,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	

Total	1500	100,0	
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These findings reverse partially the results of our literature review according to which concerns about possible threat to data confidentiality remains a major barrier to patient’s acceptance to telehealth. It, however, confirms that concerns over data confidentiality are significantly reduced among patients who use or have used telehealth services.

4.1.2.3.2 Privacy

Moving on to privacy, we asked patients whether they think telehealth could affect their privacy in a negative way. Only 12% of the users think that telehealth services affect negatively their privacy, while 62% disagree with this negative formulated statement (Table 67) **Error! Reference source not found.** Half of the non-users had no clear opinion and 35% disagreed with the statement (Table 68 **Error! Reference source not found.**).

Table 67: Patients/Users - Telehealth services affects negatively my privacy (Q30)

Telehealth services affect negatively my privacy		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	5	5,4	6,7
	Moderately agree	4	4,3	5,3
	Neither agree nor disagree	19	20,7	25,3
	Moderately disagree	28	30,4	37,3
	Strongly disagree	19	20,7	25,3
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 68: Patients/Non-users - Telehealth services affects negatively my privacy (Q30)

Telehealth services affect negatively my privacy (Q30)		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	40	2,7	3,3
	Moderately agree	139	9,3	11,3
	Neither agree nor disagree	620	41,3	50,6
	Moderately disagree	295	19,7	24,1
	Strongly disagree	132	8,8	10,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

Through Q48 we wanted to understand whether patients would be willing to compromise on certain “soft” aspects of their privacy, notably aspects relating to the intrusiveness of telehealth as described above if telehealth would prove to yield other benefits, like for instance, increased independence, better health status and quality of life, etc.

44% of the patient users (Table 69) and 30% of non-users (Table 70) said they would be willing to compromise on certain aspects of their privacy ($p=0,05$) in favour of using telehealth. However, 33% of users and 32% of non-users disagree with the statement and would not be willing to compromise on their privacy when using telehealth.

Table 69: Patients/Users - I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits (Q48)

Patients/Users - I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	9	9,8	12,0
	Moderately agree	24	26,1	32,0
	Neither agree nor disagree	17	18,5	22,7
	Moderately disagree	11	12,0	14,7

	Strongly disagree	14	15,2	18,7
	Total	75	81,5	100,0
<i>Missing</i>	System	17	18,5	
Total		92	100,0	

Table 70: Patients/Non-users: I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits (Q48)

Patients/Non-users – I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	82	5,5	6,7
	Moderately agree	288	19,2	23,5
	Neither agree nor disagree	460	30,7	37,5
	Moderately disagree	171	11,4	13,9
	Strongly disagree	225	15,0	18,4
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

Similarly to the previous question, patients who use or have used telehealth services tend to be less concerned about the possible negative implications of telehealth for their privacy. This could be explained by the fact that, having some experience of telehealth they are more aware of the advantages of telehealth and are, therefore, more willing to “trade” certain aspects of their privacy in exchange of other telehealth benefits.

4.1.2.4 Patient Safety

On the aspect of ‘safety’ in the delivery of telehealth services compared to conventional health services, 54% of telehealth users think telehealth is as safe as face-to-face services (Table 72). In contrast, 29% of non-users perceiving telehealth services as safe as traditional health services delivered face-to-face (**Error! Reference source not found.**). Nevertheless, a similar number of users (24%) and non-users (21%) think that telehealth services are not as safe as conventional face-to-face health services.

Table 71: Patients/Users - Telehealth is as safe as conventional face-to-face health services (Q28)

Telehealth is as safe as conventional face-to-face health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	14	15,2	18,7
	Moderately agree	27	29,3	36,0
	Neither agree nor disagree	16	17,4	21,3
	Moderately disagree	12	13,0	16,0
	Strongly disagree	6	6,5	8,0
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 72: Patients/Non-users - Telehealth is as safe as conventional face-to-face health services (Q28)

Telehealth is as safe as conventional face-to-face health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	81	5,4	6,6
	Moderately agree	281	18,7	22,9
	Neither agree nor disagree	602	40,1	49,1
	Moderately disagree	201	13,4	16,4
	Strongly disagree	61	4,1	5,0
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.5 Telehealth as a valid complement to conventional healthcare

72% of the respondents think that telehealth is a valid complement to the conventional healthcare services (**Error! Reference source not found.**). Nevertheless, 77% of the patients (Table 74) think that telehealth should not replace face-to-face contacts with healthcare professionals (90% of telehealth users agreed with this statement). Only 3% disagree and the percentage of ‘no clear view’ is relatively low, compared to other questions.

All this largely confirms the findings of the literature review and highlights the importance of keeping face-to-face contacts between the patients and health professionals. There is sufficient evidence coming from both the literature and the survey that face-to-face contacts are a key pre-condition for maintaining mutual trust among users when introducing telehealth. Putting this differently, one could say that telehealth should reduce unnecessary use of conventional health services, but in order not to undermine trust and foster acceptance patients and health professionals should jointly define the minimum level of face to face contacts to be maintained after the introduction of telehealth. This is in line with a patient-centred model of care whereby health services are designed around the needs of the patient and not the other way round.

Table 73: Patients - Telehealth is a valid complement to conventional healthcare services (Q32)

Telehealth is a valid complement to conventional healthcare services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	353	21,4	27,1
	Moderately agree	582	35,4	44,7
	Neither agree nor disagree	312	19,0	23,9
	Moderately disagree	37	2,2	2,8
	Strongly disagree	19	1,2	1,5
	Total	1303	79,2	100,0
Missing	System	343	20,8	
Total		1646	100,0	

Table 74: Patients - Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate (Q43)

Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	600	36,5	46,0
	Moderately agree	397	24,1	30,5
	Neither agree nor disagree	268	16,3	20,6
	Moderately disagree	23	1,4	1,8
	Strongly disagree	15	,9	1,2
	Total	1303	79,2	100,0
Missing	System	343	20,8	
Total		1646	100,0	

4.1.2.6 Benefits of Telehealth

Questions included under this domain were aimed at assessing whether patients think that telehealth can bring about benefits to them, and if so which ones.

4.1.2.6.1 Access to healthcare

Access to healthcare was assessed in relation to two main aspects: a) geographically, i.e. whether patients think that telehealth can improve access to healthcare for people living in underserved areas, and; b) socio-economically, i.e. whether patients think that telehealth can improve access to healthcare for disadvantaged groups of people.

The majority of the patient respondents (75%) think that telehealth can improve the access to healthcare for patients living in underserved areas (Table 75). We need, however, to be extremely careful with these findings as through our survey we managed to capture the views of patients living in underserved areas only to a very limited extent. All patients who responded to the survey live close to a health facility, having a high education and belong to a better-off socio-economic class.

Table 75: Telehealth improves access to healthcare particularly for patients living in underserved areas (Q25)

Telehealth improves access to healthcare particularly for patients living in underserved areas		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	469	28,5	36,0
	Moderately agree	512	31,1	39,3
	Neither agree nor disagree	261	15,9	20,0
	Moderately disagree	35	2,1	2,7
	Strongly disagree	26	1,6	2,0
	Total		1303	79,2
Missing	System	343	20,8	
Total		1646	100,0	

Similarly, findings indicate that 67% of the responding patients think that telehealth improves access to health services for disadvantaged patients (Table 76).

Table 76: Telehealth improves access to health services for disadvantaged patients (Q26)

Telehealth improves access to health services for disadvantaged patients		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	379	23,0	29,1
	Moderately agree	494	30,0	37,9
	Neither agree nor disagree	300	18,2	23,0
	Moderately disagree	77	4,7	5,9
	Strongly disagree	53	3,2	4,1
	Total		1303	79,2
Missing	System	343	20,8	
Total		1646	100,0	

These findings seem to suggest that overall patients think that telehealth carries the potential for reducing health inequalities through more affordable healthcare services for the patients.

4.1.2.6.2 Impact of telehealth on the health status of the patients

In question 37 patients were asked to give their opinion as to whether the overall health status of the patient could improve as a result of introducing telehealth to complement conventional healthcare services. Interestingly enough, the opinion changes dramatically depending on whether the respondent has used/is using telehealth services. 43% of the telehealth users indicated that their health status improves with the addition of telehealth to the conventional health services (Table 77). By contrast, only 18,4% of non-users agreed with this statement (Table 78). However, 20% of users state that they do not think their health status improves, opposed to 13% of non-users who thought the same.

Table 77: Patients/Users - My health status improves with the addition of telehealth to conventional health services (Q37)

My health status improves with the addition of telehealth to conventional health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	13	14,1	17,3
	Moderately agree	19	20,7	25,3
	Neither agree nor disagree	28	30,4	37,3
	Moderately disagree	9	9,8	12,0

	Strongly disagree	6	6,5	8,0
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 78: Patients/Non-users - My health status improves with the addition of telehealth to conventional health services (Q37)

My health status improves with the addition of telehealth to conventional health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	89	5,9	7,3
	Moderately agree	136	9,1	11,1
	Neither agree nor disagree	846	56,4	69,0
	Moderately disagree	72	4,8	5,9
	Strongly disagree	83	5,5	6,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.6.3 Impact of telehealth on quality of care

Question 34 was meant to gather indications as to whether patients think that the quality of health services could increase as a result of introducing telehealth to complement more traditional healthcare services. Both users and non-users of telehealth tend to agree with this statement, although the level of agreement is much higher among the former group of respondents.

77% of patients using telehealth indicated that the use of telehealth helps to increase the quality of health services (Table 79) as well 57% non-users agreed with this statement (Table 81).

Table 79: Patients/Users - Telehealth helps to increase the quality of health services (Q34)

Telehealth helps to increase the quality of health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	20	21,7	26,7
	Moderately agree	38	41,3	50,7
	Neither agree nor disagree	10	10,9	13,3
	Moderately disagree	4	4,3	5,3
	Strongly disagree	3	3,3	4,0
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 80: Patients/Non-users - Telehealth helps to increase the quality of health services (Q34)

Telehealth helps to increase the quality of health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	201	13,4	16,4
	Moderately agree	398	26,5	32,5
	Neither agree nor disagree	555	37,0	45,3
	Moderately disagree	40	2,7	3,3
	Strongly disagree	32	2,1	2,6
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.6.4 Impact of telehealth on patient adherence

In question 35 we asked the patients to provide their view as to whether telehealth can increase patient adherence to treatment. In the literature review we defined patient adherence as “the extent to which a person's behaviour coincides with medical or health advice, such as taking

medication regularly, returning to a health professional's office for follow-up appointments, and observing preventive and healthful lifestyle changes”.

Looking at the answers received in relation to question 35, 70% of the patients-users think that the addition of telehealth improves their adherence to treatment and care (Table 81). The non-users of the patient sample agreed with this statement in 50% of the cases (Table 82). These findings are very indicative of the importance of adherence among patients. Patients seem to think that thanks to their more active involvement in decisions concerning their health inherent in many telehealth services (see also 4.1.2.1) patients are more aware of the importance of adhering to treatments, thus they are more willing to actually do so.

Table 81: Patients/Users - The addition of telehealth to conventional health services improves my adherence to treatment and care (Q35)

The addition of telehealth to conventional health services improves my adherence to treatment and care		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	25	27,2	33,3
	Moderately agree	28	30,4	37,3
	Neither agree nor disagree	18	19,6	24,0
	Moderately disagree	2	2,2	2,7
	Strongly disagree	2	2,2	2,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 82: Patients/Non-users - The addition of telehealth to conventional health services improves my adherence to treatment and care (Q35)

The addition of telehealth to conventional health services improves my adherence to treatment and care		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	177	11,8	14,4
	Moderately agree	445	29,7	36,3
	Neither agree nor disagree	487	32,5	39,7
	Moderately disagree	80	5,3	6,5
	Strongly disagree	37	2,5	3,0
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.6.5 Impact of telehealth on patients' daily lives

When it comes to the statement ‘telehealth fits into my daily life’ (Q39), most patients using telehealth, 68% (Table 83) indicate that telehealth fits into their daily life, while 55% of non-users (Table 84) do not have an opinion and 36% agreed with the statement.

Table 83: Patients/Users - Telehealth fits into my daily life (Q39)

Telehealth fits into my daily life		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	21	22,8	28,0
	Moderately agree	30	32,6	40,0
	Neither agree nor disagree	14	15,2	18,7
	Moderately disagree	5	5,4	6,7
	Strongly disagree	5	5,4	6,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 84: Patients/Non-users - Telehealth fits into my daily life (Q39)

Telehealth fits into my daily life		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	127	8,5	10,4
	Moderately agree	320	21,3	26,1
	Neither agree nor disagree	678	45,2	55,3
	Moderately disagree	54	3,6	4,4
	Strongly disagree	47	3,1	3,8
	Total		1226	81,7
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.6.6 Impact of telehealth on healthcare costs for the patients

When it comes to patients’ expenses for healthcare, a clear majority of patients using telehealth - 75% (Table 85) think that telehealth saves money they spend on healthcare. Healthcare costs are not only direct expenses, i.e. less patients may have to pay for out-patients and in-patient services, but also all indirect costs associated with it, e.g. travel, days off work, etc. Only 8% disagree with this statement. The position on this statement is stronger from the ‘users’ then from the ‘non-users’ as the category “neither agree nor disagree” for the non-users increases to 41% (Table 86). Nevertheless, 53% of the non-users agree with the statement that telehealth saves money.

Table 85: Patients/Users - Telehealth helps me save money I spend on healthcare (less travel, less in-patient visits, less hours off-work, etc.) (Q40)

Telehealth helps me save money I spend on healthcare (less travel, less in-patient visits, less hours off-work, etc.)		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	28	30,4	37,3
	Moderately agree	28	30,4	37,3
	Neither agree nor disagree	13	14,1	17,3
	Moderately disagree	3	3,3	4,0
	Strongly disagree	3	3,3	4,0
	Total		75	81,5
Missing	System	17	18,5	
Total		92	100,0	

Table 86: Patients/Non-users - Telehealth helps me save money I spend on healthcare (less travel, less in-patient visits, less hours off-work, etc.) (Q40)

Telehealth helps me save money I spend on healthcare (less travel, less in-patient visits, less hours off-work, etc.)		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	231	15,4	18,8
	Moderately agree	411	27,4	33,5
	Neither agree nor disagree	504	33,6	41,1
	Moderately disagree	48	3,2	3,9
	Strongly disagree	32	2,1	2,6
	Total		1226	81,7
Missing	System	274	18,3	
Total		1500	100,0	

Linked to a previous statement, 43% of the respondents that use telehealth (Table 87) and 33% of the non-users (Table 88) are not ready to pay more. Only 24% of non-users were ready to pay more, while 37% of users would agree to pay more for the health services if telehealth led to other benefits. Again, however, we need to be extremely mindful in interpreting these findings as only to a limited extent did we manage through our survey to capture the views of patients belonging to lower socio-economic classes.

Table 87: Patients/Users - I am ready to pay more for my health services if telehealth leads to other benefits (Q47)

I am ready to pay more for my health services if telehealth leads to other benefits		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	11	12,0	14,7
	Moderately agree	17	18,5	22,7
	Neither agree nor disagree	15	16,3	20,0
	Moderately disagree	18	19,6	24,0
	Strongly disagree	14	15,2	18,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 88: Patients/Non-users: I am ready to pay more for my health services if telehealth leads to other benefits (Q47)

I am ready to pay more for my health services if telehealth leads to other benefits		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	61	4,1	5,0
	Moderately agree	233	15,5	19,0
	Neither agree nor disagree	532	35,5	43,4
	Moderately disagree	226	15,1	18,4
	Strongly disagree	174	11,6	14,2
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.6.7 Impact of telehealth on family members / informal carers

41% of the patients think that when using telehealth their family and relatives are less concerned about their health status while 43% have no opinion (Table 89). 26% of non-users (Table 90) think that their family/relatives would be less concerned if they used telehealth.

Table 89: Patients/Users - Using telehealth my family/relatives are less concerned about my health status (Q41)

Using telehealth my family/relatives are less concerned about my health status		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	11	12,0	14,7
	Moderately agree	20	21,7	26,7
	Neither agree nor disagree	32	34,8	42,7
	Moderately disagree	7	7,6	9,3
	Strongly disagree	5	5,4	6,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 90: Patients/Non-users - Using telehealth my family/relatives are less concerned about my health status (Q41)

Using telehealth my family/relatives are less concerned about my health status		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	91	6,1	7,4
	Moderately agree	231	15,4	18,8
	Neither agree nor disagree	728	48,5	59,4
	Moderately disagree	113	7,5	9,2
	Strongly disagree	63	4,2	5,1
	Total	1226	81,7	100,0

Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.6.8 Patient outcomes

As mentioned in the literature review, an aspect that is often overlooked in many studies on users' perspective of telehealth is whether the patients think that telehealth could help them improve their knowledge of their health condition.

When responding to the statement 'telehealth helps improving my knowledge of my health condition', the majority of users - 73% (Table 91) responded positively, while 55% of non-users (Table 92) also agreed with this statement.

Table 91: Patients/Users - Telehealth helps me improve my knowledge of my health condition (Q45)

Telehealth helps me improve my knowledge of my health condition		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	23	25,0	30,7
	Moderately agree	32	34,8	42,7
	Neither agree nor disagree	14	15,2	18,7
	Moderately disagree	4	4,3	5,3
	Strongly disagree	2	2,2	2,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 92: Patients/Non-users - Telehealth helps me improve my knowledge of my health condition (Q45)

Telehealth helps me improve my knowledge of my health condition		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	199	13,3	16,2
	Moderately agree	480	32,0	39,2
	Neither agree nor disagree	468	31,2	38,2
	Moderately disagree	45	3,0	3,7
	Strongly disagree	34	2,3	2,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

4.1.2.7 Patients – Telehealth services are easy to use (Q27)

Most patients who are using telehealth services indicated the telehealth services are easy to use (72%) (Table 93) compared to 37% of the non-users who indicated that telehealth services are easy to use (Table 94). However a very similar percentage of patients using telehealth (8%) and non-users (9%) find it difficult to use or think it is difficult to use.

Table 93: Patients/Users - Telehealth services are easy to use

Telehealth services are easy to use		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	22	23,9	29,3
	Moderately agree	32	34,8	42,7
	Neither agree nor disagree	15	16,3	20,0
	Moderately disagree	2	2,2	2,7
	Strongly disagree	4	4,3	5,3
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 94: Patients/Non-users - Telehealth services are easy to use

Telehealth services are easy to use	Frequency	Percentage	Valid Percentage
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Valid	Strongly agree	140	9,3	11,4
	Moderately agree	311	20,7	25,4
	Neither agree nor disagree	663	44,2	54,1
	Moderately disagree	90	6,0	7,3
	Strongly disagree	22	1,5	1,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

In addition, we explored the relationship between patients’ opinion on ‘easy to use telehealth’ and whether they have received any sort of training on telehealth. Not surprisingly, those patients who received training in telehealth thought telehealth was easy to use (61%), while those who did not receive any training found it more difficult (Table 95).

This suggests that many of the barriers associated with the usability of telehealth services and applications can be overcome through effective training.

Table 95: Patients - Have you followed any training on telehealth in the last three years? * Telehealth services are easy to use (Cross-tabulation)

Have you followed any training on telehealth in the last three years? * Telehealth services are easy to use Cross-tabulation								
			Telehealth services are easy to use					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Have you followed any training on telehealth in the last three years?	Yes	Count	11	11	11	1	2	36
		%	30,6%	30,6%	30,6%	2,8%	5,6%	100,0%
	No	Count	153	332	667	91	24	1267
		%	12,1%	26,2%	52,6%	7,2%	1,9%	100,0%
Total		Count	164	343	678	92	26	1303
		%	12,6%	26,3%	52,0%	7,1%	2,0%	100,0%

4.1.2.8 Impact on communication patient-health professionals

The impact of telehealth on patient-professionals communication was identified as a major issue by the Chain of Trust consortium through the literature review. This is in fact one of the underlying elements of trust and acceptance, and as such lies at the very heart of the Chain of Trust project.

The questionnaire included a set of questions aimed at assessing how patients perceive the impact of telehealth on the communication and relationship with health professionals.

20% of the respondents using telehealth services think that telehealth affects negatively the communication between them and the healthcare professional (Table 96), while 38% of non-users indicate that telehealth would have a negative effect on the communication patient-health professional (Table 97). In contrast, 47% of users disagreed with this statement against only 20% of the non-users. Consequently, we can conclude that the majority of telehealth users think that telehealth does not have a negative impact on their communication with their health professionals.

Table 96: Patients/Users - Telehealth affects negatively the communication between patients and health professionals (Q29)

Telehealth affects negatively the communication between patients and health professionals		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	6	6,5	8,0
	Moderately agree	9	9,8	12,0
	Neither agree nor disagree	25	27,2	33,3

	Moderately disagree	22	23,9	29,3
	Strongly disagree	13	14,1	17,3
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 97: Patients/Non users - Telehealth affects negatively the communication between patients and health professionals (Q29)

Telehealth affects negatively the communication between patients and health professionals		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	122	8,1	10,0
	Moderately agree	349	23,3	28,5
	Neither agree nor disagree	506	33,7	41,3
	Moderately disagree	203	13,5	16,6
	Strongly disagree	46	3,1	3,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

When it comes to the contact with the healthcare professional delivering telehealth services, 37% of patient users think that telehealth consultations are impersonal (Table 98); however 36% disagree with the statement ‘telehealth consultations are impersonal’. It is worth remarking that 36% of the patient users indicated that telehealth consultations with healthcare professional are impersonal. From the non-users perspective (Table 99), similar findings are presented although the category ‘neither agree nor disagree’ increases with the non-users to 41%.

Table 98: Patients/Users - Telehealth consultations with health professionals are impersonal

Telehealth consultations with health professionals are impersonal		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	10	10,9	13,3
	Moderately agree	18	19,6	24,0
	Neither agree nor disagree	20	21,7	26,7
	Moderately disagree	17	18,5	22,7
	Strongly disagree	10	10,9	13,3
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 99: Patients/Non-users - Telehealth consultations with health professionals are impersonal

Telehealth consultations with health professionals are impersonal		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	122	8,1	10,0
	Moderately agree	349	23,3	28,5
	Neither agree nor disagree	506	33,7	41,3
	Moderately disagree	203	13,5	16,6
	Strongly disagree	46	3,1	3,8
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

Furthermore, the difficulty in evaluating the physical and emotional conditions of patients when using telehealth services is recognised by 56% of the users (Table 100) and 54% of the non-user respondents (Table 101). 26% of users disagreed with this statement, compared to 13% of non-users.

Table 100: Patients/Users - When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions (Q31)

When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	11	12,0	14,7
	Moderately agree	31	33,7	41,3
	Neither agree nor disagree	13	14,1	17,3
	Moderately disagree	15	16,3	20,0
	Strongly disagree	5	5,4	6,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 101: Patients/Non-users - When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions (Q31)

When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	197	13,1	16,1
	Moderately agree	461	30,7	37,6
	Neither agree nor disagree	413	27,5	33,7
	Moderately disagree	132	8,8	10,8
	Strongly disagree	23	1,5	1,9
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

35% of the patients who use/have used telehealth services indicate that health professionals can draw conclusions as accurately as they would be able to do through conventional services (Table 102), while the non-users are more sceptical as only 24% of the non-users respondents agree with this statement (Table 103). However, also 40% of users disagreed with this statement and thought that using telehealth it is not possible to draw as accurate conclusions as when using conventional health services.

Table 102: Patients/Users -Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services (Q33)

Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	6	6,5	8,0
	Moderately agree	20	21,7	26,7
	Neither agree nor disagree	19	20,7	25,3
	Moderately disagree	22	23,9	29,3
	Strongly disagree	8	8,7	10,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 103: Patients/Non-users - Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services (Q33)

Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	46	3,1	3,8
	Moderately agree	249	16,6	20,3
	Neither agree nor disagree	528	35,2	43,1
	Moderately disagree	314	20,9	25,6
	Strongly disagree	89	5,9	7,3
	Total	1226	81,7	100,0
Missing	System	274	18,3	

Total	1500	100,0	
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Interestingly, 31% of the patients using telehealth are concerned about the expertise of the healthcare professionals who monitor their health status through telehealth (Table 104) and 30% of non-users thought they would be concerned about it too (Table 105). By contrast, 33% of users and 20% of non-users disagreed with the statement ‘I am concerned about the expertise of the professionals who monitor their health status through telehealth - Q46’ and think their health professional is competent to monitor their health status via telehealth.

Table 104: Patients/Users – I am concerned about the expertise of the professionals who monitor my health status through telehealth (Q46)

I am concerned about the expertise of the professionals who monitor my health status through telehealth		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	9	9,8	12,0
	Moderately agree	14	15,2	18,7
	Neither agree nor disagree	22	23,9	29,3
	Moderately disagree	19	20,7	25,3
	Strongly disagree	11	12,0	14,7
	Total	75	81,5	100,0
Missing	System	17	18,5	
Total		92	100,0	

Table 105: Patients/Non-users - I am concerned about the expertise of the professionals who monitor my health status through telehealth (Q46)

I am concerned about the expertise of the professionals who monitor my health status through telehealth		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	94	6,3	7,7
	Moderately agree	272	18,1	22,2
	Neither agree nor disagree	611	40,7	49,8
	Moderately disagree	208	13,9	17,0
	Strongly disagree	41	2,7	3,3
	Total	1226	81,7	100,0
Missing	System	274	18,3	
Total		1500	100,0	

By contrast, when it comes to the impact of telehealth on communication between the patients and health professional, 61% of the patients think that telehealth helps staying more in touch with their healthcare professionals (75% of users) (Table 106).

Table 106: Patients - Telehealth helps me stay more regularly in touch with health professionals (Q36)

Telehealth helps me stay more regularly in touch with health professionals		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	252	15,3	19,3
	Moderately agree	544	33,0	41,7
	Neither agree nor disagree	420	25,5	32,2
	Moderately disagree	58	3,5	4,5
	Strongly disagree	29	1,8	2,2
	Total	1303	79,2	100,0
Missing	System	343	20,8	
Total		1646	100,0	

4.1.3 Summary of the findings regarding patients’ perspective

All the statements were rated by respondents from ‘strongly disagree’ (1) to ‘strongly agree’ (5) with reference to their personal experience or perception in relation to telehealth services. The analysis

focused on the 'users' and the 'non-users' of telehealth and identified the similarities and differences in their perceptions.

The findings can be grouped into seven themes with the following conclusions:

1. Patients taking additional responsibilities for managing their condition

Key finding:

- Patients are willing to take up additional responsibility for managing their condition

Detailed findings:

- A certain degree of responsibility shift from health professionals to patients is inherent in many telehealth services. Interestingly, our survey revealed that 92% of the patients are willing to play a more active role in managing their own health condition, while 48% of the patient user respondents indicated they are confident they can handle the additional responsibilities presented by the use of telehealth in managing their condition.
- 62% of the patients responding to our survey declared they are willing to use telehealth in the short and medium term, which represents 80% of telehealth users and 60% of non-users.

2. Privacy and confidentiality

Key findings:

- Confidentiality is not a problematic issue for patients when it comes to telehealth
- Patients think that privacy is not put at risk by telehealth. They would be in principle willing to compromise on some aspects relating to their privacy as long as telehealth yields other benefits

Detailed findings:

- 53% of patient users do not agree with the statement that telehealth negatively affects the confidentiality of data and even 32% of non-users disagreeing. This is indicative of the fact that confidentiality seems not to represent a major barrier to telehealth adoption among patients. Concerns regarding data confidentiality among patients in telehealth-mediated consultations/monitoring are significantly reduced with the use of telehealth..
- Only 12% of the users think that telehealth services affect negatively their privacy, while 62% disagree.
- 44% of the patient users and 30% of non-users are willing to compromise on certain aspects of their privacy ($p=0,05$) in favour of using telehealth while 33% of users and 32% of non-users would not be willing to compromise on their privacy when using telehealth.

3. Safety

Key finding:

- Patient users think that telehealth is as safe as conventional healthcare services, while non-users think that patient safety is reduced when using telehealth.

Detailed findings

- 54% of telehealth users think telehealth is as safe as face-to-face services while in contrast, only 29% of non-users perceive telehealth services as safe as traditional health services delivered face-to-face.

4. Telehealth as a valid complement to conventional healthcare

Key finding:

- Patients think that telehealth is a valid complement to conventional healthcare services, but it shall not replace face-to-face contacts between patients and health professionals.

Detailed findings:

- 72% of the respondents think that telehealth is a valid complement to the conventional healthcare services.
- Overall 77% of the patients think that telehealth should not replace face-to-face contact with healthcare professionals, which increases to 90% for the user group.

5. Perceived benefits of telehealth

Key findings:

- Patients tend to think that telehealth improves access to healthcare and increases the quality of healthcare services.
- Patients think that telehealth could improve their knowledge of the condition as well as the adherence to treatment. This is indicative of the fact that telehealth, if implemented properly, could be instrumental in strengthening patient empowerment.
- Patients think that telehealth could lead to economic benefits for the patients, i.e. less personal money spent on healthcare. At the same time, provided telehealth yields other benefits, they would be willing to pay more for healthcare services that services their needs.

Detailed findings:

- 75% think that telehealth improves the access to healthcare for patients living in underserved areas.
- 67% of the responding patients think that telehealth improves access to health services for disadvantaged patients.
- 43% of the telehealth users indicated that their health status improves with the adoption of telehealth along with conventional health services.
- 77% of the patients using telehealth indicated that the use of telehealth helps to increase the quality of health services. This high percentage of agreement in both groups shows that the respondents are quite clear that quality becomes an important advantage of telehealth.
- 70% of the patient-users indicated that the adoption of telehealth improves their adherence to treatment and care. Also 50% of the non-users agreed with this benefit.
- 68% of the users indicated that telehealth fits into their daily life, while 55% of non-users did not have an opinion and 36% agreed with the statement.
- 75% of the users think that telehealth saves money spent on healthcare and supported by 53% of the non-users.
- 43% of the patients who use telehealth and 33% of the non-users are not ready to pay more. Only 24% of non-users were ready to pay more, while 37% of users would agree to pay more for the health services if telehealth leads to other benefits.

- 41% of the patients think that their family and relatives are less concerned about their health status while 26% of non-users think that their family/relatives would be less concerned if they used telehealth. Consequently, there is a clear message that telehealth would help patients' relatives and families of to feel less concerned about the patients' health status.
- 73% responded positively to the statement that telehealth improves the knowledge of one's health condition, with 55% of non-users also agreeing with the statement.

6. Telehealth is easy to use

- 72% of the users find telehealth services easy to use compared to 37% of the non-users.
- 61% of patients who received training in telehealth think telehealth is easy to use while those who did not receive any training find it more difficult.

7. Impact of telehealth on patient-professionals communication

Key finding:

- Patients' perception of the impact of telehealth on patient-professional communication is not straightforward. Overall, as shown in the detailed findings, no definitive conclusion can be drawn as to whether telehealth leads to improvement or deterioration of communication and relationship with health professionals.

Detailed findings:

- 47% of the users disagree that telehealth affects the communication between the patient and healthcare professional negatively while 38% of non-users think there is a negative effect.
- 37% of users think that the telehealth consultations are impersonal although 36% disagree. Nevertheless, it is quite worth noting that 36% of the patient users indicated that telehealth consultations with healthcare professional are impersonal.
- The difficulty to evaluate the physical and emotional conditions of patients when using telehealth services was recognised by 56% of the users and 54% of the non-user patients.
- 35% of the users indicated that health professionals can draw conclusions as accurate as they would be able to do through conventional services, while the non-users are more sceptical as only 24% of the non-users respondents agreed with this statement.
- 33% of the users using telehealth are not concerned about the experience of the healthcare professional monitoring their health status through telehealth while 30% of non-users are concerned.
- 61% of the patients think that telehealth helps to stay more in touch with healthcare professionals, which increases to 75% for the user group.

4.2 Health professionals'

4.2.1 Overview

All following statements were rated by respondents from 'strongly disagree' (1) to 'strongly agree' (5) with reference to their personal experience or perception in relation to telehealth. Within this set of statements, we have identified different themes which will be further analysed such as 'patient

competence', 'confidentiality', 'safety', telehealth as a complement to conventional healthcare, 'benefits of telehealth', 'patient-health professional communication' and 'workplace' (Table 107).

Table 107: Overview of professionals' responses to the statements

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree
Patients are sufficiently competent to use telehealth tools	3,4%	25,5%	26,4%	35,3%	9,5%
Telehealth affect negatively the confidentiality of data	2,2%	14,3%	28,1%	42,9%	12,6%
Telehealth improves access to healthcare particularly for patients living in underserved areas	29,3%	51,8%	11,4%	5,5%	1,9%
Telehealth improves access to health services for vulnerable patient groups (old, seriously sick, socio-economically disadvantaged, etc.)	21,6%	43,3%	18,6%	12,2%	4,3%
Telehealth applications are easy to use	6,7%	29,0%	49,9%	12,1%	2,3%
Telehealth is as safe as conventional face-to-face health services	5,4%	27,7%	36,8%	24,0%	6,1%
Telehealth affects negatively the communication between patients and health care professionals	5,5%	22,1%	31,8%	32,6%	8,1%
Telehealth consultations with patients are impersonal	9,9%	28,9%	31,6%	24,5%	5,1%
Telehealth improves cooperation among health professionals	18,7%	45,6%	27,7%	6,5%	1,5%
When using telehealth the physical and emotional condition of the patient are difficult to evaluate	13,9%	44,1%	26,5%	14,2%	1,3%
Telehealth is a valid complement to conventional health services	24,4%	55,0%	16,7%	3,0%	,9%
Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations	6,0%	27,4%	30,8%	28,6%	7,1%
Telehealth helps to increase the quality of health services	18,1%	50,7%	23,9%	5,5%	1,8%
The addition of telehealth to conventional health services improves patients' adherence to treatment and care	15,5%	44,8%	31,4%	6,7%	1,6%
Telehealth helps me stay more regularly in touch with patients	14,0%	44,1%	31,3%	7,2%	3,4%
The health status of my patients improves with the addition of telehealth to conventional health services	7,3%	19,5%	64,9%	5,3%	3,0%
I am adequately trained to use telehealth tools	3,7%	11,4%	22,7%	24,3%	37,9%
Telehealth helps to reduce my workload	3,1%	11,7%	50,4%	18,6%	16,2%
My work place has sufficient technical facilities (broadband internet, computers, etc.) to provide telehealth	12,8%	30,6%	18,8%	19,3%	18,5%
The management of my place of work promotes the use and implementation of telehealth services	5,8%	15,2%	35,4%	21,9%	21,6%
I am willing to use telehealth tools in the short to medium term	22,6%	48,8%	22,2%	3,9%	2,4%
Telehealth should not replace face-to-face contact with patients where it is possible and appropriate.	52,4%	35,7%	7,7%	2,5%	1,7%
Telehealth services fulfil my professional needs	4,9%	19,3%	53,2%	15,1%	7,6%
Telehealth enables me to receive and provide sufficient information for patient care	7,5%	31,4%	43,0%	13,0%	5,0%

4.2.2 Detailed analysis

4.2.2.1 Competence

4.2.2.1.1 Patients taking additional responsibility for managing their condition

As mentioned already in paragraph 4.1.2.1 a certain shift of responsibility from health professional to patients is often needed in telehealth services. For a health professional it is critical to ensure he/she feels confident their patients are willing and, more importantly ready, i.e. they are equipped with the skillset required, to take up more responsibilities for the management of their condition. This element is of primary importance not only to ensuring user acceptance, but also to maintaining mutual trust between patients and health professionals.

To that end we asked health professionals to provide their views as to whether they think patients are sufficiently competent to use telehealth. Findings show that only 29% of healthcare professional

respondents think that patients are sufficiently competent to use telehealth tools. Their perceptions vary depending on whether they have used telehealth or not.

39% of users (Table 108) think that patients are competent to use telehealth tools and only 17% of non-users (Table 109) agree with this statement. Therefore a much greater number of healthcare professionals who have provided services using telehealth tools trust the competence of their patients. In contrast, 38% of user and as much as 52% of non-user healthcare professional respondents disagree with the fact that patients are sufficiently competent to use telehealth tools.

Table 108: Professional/Users - Patients are sufficiently competent to use telehealth tools (Q17)

Patients are sufficiently competent to use telehealth tools		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	45	4,6	5,5
	Moderately agree	272	27,9	33,3
	Neither agree nor disagree	193	19,8	23,6
	Moderately disagree	267	27,4	32,7
	Strongly disagree	40	4,1	4,9
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 109: Professionals/Non-users - Patients are sufficiently competent to use telehealth tools (Q17)

Patients are sufficiently competent to use telehealth tools		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	128	2,5	3,4
	Moderately agree	969	19,2	25,5
	Neither agree nor disagree	1003	19,8	26,4
	Moderately disagree	1339	26,5	35,3
	Strongly disagree	359	7,1	9,5
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

There is a weak association between the gender of the healthcare professional and whether he/she thinks that patients are competent to use telehealth tools (Table 110). Male healthcare professionals are more positive that patients are competent to use telehealth tools (p=0,19).

Table 110: Professionals by gender - Patients are sufficiently competent to use telehealth tools (Q17)

Patients are sufficiently competent to use telehealth tools		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree		
Gender	Male	Count	24	104	77	80	14	299
		%	8.0%	34.8%	25.8%	26.8%	4.7%	100.0%
	Female	Count	21	168	116	187	26	518
		%	4.1%	32.4%	22.4%	36.1%	5.0%	100.0%
Total		Count	45	272	193	267	40	817
		%	5.5%	33.3%	23.6%	32.7%	4.9%	100.0%

4.2.2.2 Telehealth is easy to use

Interestingly, 56% of healthcare professionals using telehealth find it easy to use (Table 111), compared to the 14% who find telehealth difficult to use. 30% of non-users indicated that telehealth would be easy to use (Table 112).

Table 111: Professionals/Users - Telehealth applications are easy to use (Q21)

Telehealth applications are easy to use		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	94	9,7	11,5

	Moderately agree	368	37,8	45,0
	Neither agree nor disagree	242	24,8	29,6
	Moderately disagree	100	10,3	12,2
	Strongly disagree	13	1,3	1,6
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 112: Professionals/Non-users- Telehealth applications are easy to use (Q21)

Telehealth applications are easy to use		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	159	4,3	5,3
	Moderately agree	734	19,6	24,6
	Neither agree nor disagree	1652	44,2	55,4
	Moderately disagree	361	9,7	12,1
	Strongly disagree	75	2,0	2,5
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

When looking at the relationship between the perceived ease of use of telehealth and whether the healthcare professional followed any training on telehealth, 62% of health professionals who received training in the past three years indicated that those applications were not difficult to use compared to 36% of those who did not have any training (Table 113).

Table 113: Professionals - Relationship between easiness to use telehealth tools and training one received

			Telehealth applications are easy to use					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Have you followed any training on telehealth in the last three years?	Yes	Count	61	249	125	52	11	498
		%	12,2%	50,0%	25,1%	10,4%	2,2%	100,0%
	No	Count	192	853	1769	409	77	3300
		%	5,8%	25,8%	53,6%	12,4%	2,3%	100,0%
Total		Count	253	1102	1894	461	88	3798
		%	6,7%	29,0%	49,9%	12,1%	2,3%	100,0%

45% of the user health professionals feel they have been adequately trained to use telehealth tools, however 38% of users feel that they are not sufficiently trained for that (Table 114).

Healthcare professionals not using telehealth (Table 115) are of the same opinion as patients who think that they are not sufficiently trained. Only 7% of the healthcare professionals who do not use telehealth think that they are adequately trained.

According to the cross-tabulation of the whether any training received in last three years on telehealth and whether healthcare professional thinks her/himself as adequately trained to use telehealth tools (Table 116), 57% of those who received training self-evaluated themselves as adequately trained compared to 9% who did not receive any training.

Table 114: Professionals/Users - I am adequately trained to use telehealth tools (Q33)

I am adequately trained to use telehealth tools		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	96	9,9	11,8
	Moderately agree	271	27,8	33,2
	Neither agree nor disagree	142	14,6	17,4
	Moderately disagree	225	23,1	27,5
	Strongly disagree	83	8,5	10,2

	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 115: Professionals/Non users - I am adequately trained to use telehealth tools (Q33)

I am adequately trained to use telehealth tools		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	44	1,2	1,5
	Moderately agree	162	4,3	5,4
	Neither agree nor disagree	719	19,2	24,1
	Moderately disagree	699	18,7	23,4
	Strongly disagree	1357	36,3	45,5
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

Table 116: Professionals - Relationship between training and perception of being adequately trained

			I am adequately trained to use telehealth tools					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Have you followed any training on telehealth in the last three years?	Yes	Count	79	206	102	89	22	498
		%	15,9%	41,4%	20,5%	17,9%	4,4%	100,0%
	No	Count	61	227	759	835	1418	3300
		%	1,8%	6,9%	23,0%	25,3%	43,0%	100,0%
Total		Count	140	433	861	924	1440	3798
		%	3,7%	11,4%	22,7%	24,3%	37,9%	100,0%

A significant association ($p=0,01$) was observed between the gender of the healthcare professional and whether he/she feels adequately trained to use telehealth tools. Male user and non-user healthcare professionals more often feel adequately trained (Table 117 and Table 118).

Table 117: Professionals/Users - Gender and adequate training

			I am adequately trained to use telehealth tools					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Gender	Male	Count	47	111	55	62	24	299
		%	15.7%	37.1%	18.4%	20.7%	8.0%	100.0%
	Female	Count	49	160	87	163	59	518
		%	9.5%	30.9%	16.8%	31.5%	11.4%	100.0%
Total		Count	96	271	142	225	83	817
		%	11.8%	33.2%	17.4%	27.5%	10.2%	100.0%

Table 118: Professionals/Non-users - Gender and adequate training

			I am adequately trained to use telehealth tools					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Gender	Male	Count	14	66	223	198	356	857
		%	1.6%	7.7%	26.0%	23.1%	41.5%	100.0%
	Female	Count	30	96	496	501	1001	2124
		%	1.4%	4.5%	23.4%	23.6%	47.1%	100.0%
Total		Count	44	162	719	699	1357	2981
		%	1.5%	5.4%	24.1%	23.4%	45.5%	100.0%

4.2.2.3 Confidentiality

As mentioned in Paragraph 4.1.2.3.1 confidentiality is an extension of the concept of privacy. It

refers to data (some identifiable information about a person) and to agreements about how data are to be handled in keeping with subjects' interest in controlling the access of others to information about themselves. As health data are considered under the EU legislation as constituting a particularly sensitive category of data, the issue of confidentiality is very relevant in telehealth.

In relation to confidentiality of data a relatively low percentage (15% users and 17% non-users) of the healthcare professional respondents indicated that telehealth affects negatively the confidentiality of data (Table 119 and Table 120). 66% of users and 52% of the non-users disagree with the statement 'telehealth affects negatively the confidentiality of data'. A relatively smaller percentage of healthcare professionals compared to patients think that telehealth negatively affects confidentiality of data.

Table 119: Professionals/Users - Telehealth affects negatively the confidentiality of data

Telehealth affects negatively the confidentiality of data		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	12	1,2	1,5
	Moderately agree	113	11,6	13,8
	Neither agree nor disagree	151	15,5	18,5
	Moderately disagree	404	41,5	49,4
	Strongly disagree	137	14,1	16,8
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 120: Professionals/Non-users - Telehealth affects negatively the confidentiality of data

Telehealth affects negatively the confidentiality of data		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	72	1,9	2,4
	Moderately agree	429	11,5	14,4
	Neither agree nor disagree	915	24,5	30,7
	Moderately disagree	1224	32,8	41,1
	Strongly disagree	341	9,1	11,4
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

4.2.2.4 Safety

48% of healthcare professionals who use/have used telehealth indicated that telehealth is as safe as conventional face-to-face healthcare services (Table 121), while only 30% of non-users indicated telehealth would be as safe as traditional healthcare services (Table 122). By contrast, 29% of users found it less safe compared to the face-to-face services.

Table 121: Professionals/Users - Telehealth is as safe as conventional face-to-face health services (Q22)

Telehealth is as safe as conventional face-to-face health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	70	7,2	8,6
	Moderately agree	307	31,5	37,6
	Neither agree nor disagree	213	21,9	26,1
	Moderately disagree	184	18,9	22,5
	Strongly disagree	43	4,4	5,3
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 122: Professionals/Non-users - Telehealth is as safe as conventional face-to-face health services (Q22)

Telehealth is as safe as conventional face-to-face health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	134	3,6	4,5
	Moderately agree	744	19,9	25,0
	Neither agree nor disagree	1185	31,7	39,8
	Moderately disagree	729	19,5	24,5
	Strongly disagree	189	5,1	6,3
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

Similar findings are found with the user (54%) and non-user (59%) healthcare professionals indicating that when using telehealth it is difficult to evaluate the physical and emotional condition of patients (Table 123: Professionals/Users - When using telehealth the physical and emotional condition of the patient are difficult to evaluate (Q26) and Table 124). This result is similar to the findings from patients' data. Moreover, general practitioners most often (70%) thought that it was difficult to evaluate patients' condition using telehealth. (Table 125)

Table 123: Professionals/Users - When using telehealth the physical and emotional condition of the patient are difficult to evaluate (Q26)

When using telehealth the physical and emotional condition of the patient are difficult to evaluate		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	105	10,8	12,9
	Moderately agree	336	34,5	41,1
	Neither agree nor disagree	203	20,8	24,8
	Moderately disagree	160	16,4	19,6
	Strongly disagree	13	1,3	1,6
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 124: Professionals/Non-users - When using telehealth the physical and emotional condition of the patient are difficult to evaluate (Q26)

When using telehealth the physical and emotional condition of the patient are difficult to evaluate		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	422	11,3	14,2
	Moderately agree	1340	35,9	45,0
	Neither agree nor disagree	804	21,5	27,0
	Moderately disagree	378	10,1	12,7
	Strongly disagree	37	1,0	1,2
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

Table 125: Professionals/Users - When using telehealth the physical and emotional condition of the patient are difficult to evaluate by professional groups (Q26)

		When using telehealth the physical and emotional condition of the patient are difficult to evaluate					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
General practitioner	Count	51	120	55	17	3	246
	%	20,7%	48,8%	22,4%	6,9%	1,2%	100,0%
Specialist Doctor in (please specify):	Count	87	154	73	35	1	350
	%	24,9%	44,0%	20,9%	10,0%	,3%	100,0%

Nurse	Count	202	714	445	218	17	1596
	%	12,7%	44,7%	27,9%	13,7%	1,1%	100,0%
Specialist Nurse in (please specify):	Count	102	426	255	191	17	991
	%	10,3%	43,0%	25,7%	19,3%	1,7%	100,0%
Pharmacist	Count	27	104	90	32	1	254
	%	10,6%	40,9%	35,4%	12,6%	,4%	100,0%
Other (please specify)	Count	58	158	89	45	11	361
	%	16,1%	43,8%	24,7%	12,5%	3,0%	100,0%
Total	Count	527	1676	1007	538	50	3798
	%	13,9%	44,1%	26,5%	14,2%	1,3%	100,0%

Similar to the responses from the patients, 79% of the healthcare professionals think that telehealth is a valid complement to conventional health services (Table 126).

Table 126: Professionals - Telehealth is a valid complement to conventional health services (Q27)

Telehealth is a valid complement to conventional health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	926	18,3	24,4
	Moderately agree	2090	41,3	55,0
	Neither agree nor disagree	635	12,6	16,7
	Moderately disagree	114	2,3	3,0
	Strongly disagree	33	0,7	0,9
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

A greater percentage of users (43%) than non-users (31%) among healthcare professionals think that the diagnosis, treatment and care they provide through telehealth is as accurate as what they provide with conventional healthcare (Table 127 and Table 128). In contrast, 32% of users and 37% of the non-users do not agree with this statement. Thus, the views are similarly varied as the responses to the question whether telehealth allows evaluating physical and emotional condition of the patients.

More specifically, 48% of GPs indicated that diagnosis, treatment and care when using telehealth are not as accurate as what is provided using face-to-face healthcare. Interestingly, 34.3% of specialist doctors think otherwise, in line with 41% of specialist nurses (Table 129).

Table 127: Professionals/Users - Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations (Q28)

Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	64	6,6	7,8
	Moderately agree	291	29,9	35,6
	Neither agree nor disagree	204	20,9	25,0
	Moderately disagree	218	22,4	26,7
	Strongly disagree	40	4,1	4,9
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 128: Professionals/Non-users - Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations (Q28)

Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	165	4,4	5,5
	Moderately agree	751	20,1	25,2

	Neither agree nor disagree	967	25,9	32,4
	Moderately disagree	867	23,2	29,1
	Strongly disagree	231	6,2	7,7
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

Table 129: Professionals according to profession - Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations

		Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
General practitioner	Count	11	52	66	87	30	246
	%	4,5%	21,1%	26,8%	35,4%	12,2%	100,0%
Specialist Doctor in (please specify):	Count	19	101	83	99	48	350
	%	5,4%	28,9%	23,7%	28,3%	13,7%	100,0%
Nurse	Count	101	401	527	472	95	1596
	%	6,3%	25,1%	33,0%	29,6%	6,0%	100,0%
Specialist Nurse in (please specify):	Count	67	336	286	266	36	991
	%	6,8%	33,9%	28,9%	26,8%	3,6%	100,0%
Pharmacist	Count	16	59	101	55	23	254
	%	6,3%	23,2%	39,8%	21,7%	9,1%	100,0%
Other (please specify)	Count	15	93	108	106	39	361
	%	4,2%	25,8%	29,9%	29,4%	10,8%	100,0%
Total	Count	229	1042	1171	1085	271	3798
	%	6,0%	27,4%	30,8%	28,6%	7,1%	100,0%

4.2.2.5 Benefits of Telehealth

4.2.2.5.1 Access to healthcare

Similar to the patients' responses, 81% of healthcare professionals (87% users) think that telehealth improves access to healthcare for patients living in underserved areas (Table 130).

Table 130: Professionals - Telehealth improves access to healthcare particularly for patients living in underserved areas (Q19)

Telehealth improves access to healthcare particularly for patients living in underserved areas		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	1114	22,0	29,3
	Moderately agree	1969	38,9	51,8
	Neither agree nor disagree	434	8,6	11,4
	Moderately disagree	209	4,1	5,5
	Strongly disagree	72	1,4	1,9
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

Similarly, 65% of the healthcare professionals think that telehealth improves access to health services for vulnerable patient groups (Table 131).

Table 131: Professionals - Telehealth improves access to health services for vulnerable patient groups (Q20)

Telehealth improves access to health services for vulnerable patient groups (old, seriously sick, socio-economically disadvantaged, etc.)		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	821	16,2	21,6

	Moderately agree	1643	32,5	43,3
	Neither agree nor disagree	705	13,9	18,6
	Moderately disagree	465	9,2	12,2
	Strongly disagree	164	3,2	4,3
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

4.2.2.5.2 Impact of telehealth on cooperation between healthcare professionals

64% of healthcare professionals (78% of users) think that telehealth improves cooperation among healthcare professionals. This is an extremely important finding as only 6% disagree with this statement (Table 132).

Table 133 (Q25) indicates that specialist doctors were the group of professionals most strongly agreeing with this statement (81%) and specialist nurses disagreeing with this statement more often (8,8%).

Table 132: Professionals - Telehealth improves cooperation between healthcare professionals (Q25)

Telehealth improves cooperation among health professionals		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	710	14,0	18,7
	Moderately agree	1731	34,2	45,6
	Neither agree nor disagree	1053	20,8	27,7
	Moderately disagree	248	4,9	6,5
	Strongly disagree	56	1,1	1,5
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

Table 133: Professionals by profession- Telehealth improves cooperation between healthcare professionals (Q25)

Profession	Telehealth improves cooperation among health professionals					Total	
	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree		
General practitioner	Count	62	111	60	11	2	246
	%	25,2%	45,1%	24,4%	4,5%	0,8%	100,0%
Specialist Doctor in (please specify):	Count	126	157	51	12	4	350
	%	36,0%	44,9%	14,6%	3,4%	1,1%	100,0%
Nurse	Count	223	688	545	114	26	1596
	%	14,0%	43,1%	34,1%	7,1%	1,6%	100,0%
Specialist Nurse in (please specify):	Count	167	508	229	73	14	991
	%	16,9%	51,3%	23,1%	7,4%	1,4%	100,0%
Pharmacist	Count	44	131	70	8	1	254
	%	17,3%	51,6%	27,6%	3,1%	0,4%	100,0%
Other (please specify)	Count	88	136	98	30	9	361
	%	24,4%	37,7%	27,1%	8,3%	2,5%	100,0%
Total	Count	710	1731	1053	248	56	3798
	%	18,7%	45,6%	27,7%	6,5%	1,5%	100,0%

4.2.2.5.3 Impact of telehealth on quality of healthcare

Ensuring high quality in the delivery of healthcare services is a key driver for health professionals. As such the impact of telehealth on the quality of their services is a major element behind their acceptance of taking up telehealth services.

Similar to the patients' views, 70% of the healthcare professionals (85% of users and 64% of non-users) think that telehealth increases the quality of the health services (Table 134).

Table 134: Professionals - Telehealth helps to increase the quality of health services (Q29)

Telehealth helps to increase the quality of health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	688	13,6	18,1
	Moderately agree	1925	38,1	50,7
	Neither agree nor disagree	909	18,0	23,9
	Moderately disagree	209	4,1	5,5
	Strongly disagree	67	1,3	1,8
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

When asked about whether telehealth improves patient adherence, similar to the patients' view, 60% of the healthcare professionals responded that it does (Table 135).

Table 135: Professionals - The addition of telehealth improves patients' adherence (Q30)

The addition of telehealth to conventional health services improves patients' adherence to treatment and care		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	590	11,7	15,5
	Moderately agree	1701	33,6	44,8
	Neither agree nor disagree	1193	23,6	31,4
	Moderately disagree	255	5,0	6,7
	Strongly disagree	59	1,2	1,6
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

4.2.2.5.4 Impact of telehealth on the health status of the patients

A great difference between users and non-users was observed in health professionals' responses on whether the adoption of telehealth would improve health status of patients. Users answered positively to this question in 49% cases (Table 136), while only 21% of non-users thought that it would be the case (Table 137). However, it should be noted that a great number of users (44%) and great majority of non-users (70%) had no clear view on this statement.

Table 136: Professionals/Users - The health status of my patients improves with addition of telehealth (Q32)

The health status of my patients improves with the addition of telehealth to conventional health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	111	11,4	13,6
	Moderately agree	287	29,5	35,1
	Neither agree nor disagree	356	36,6	43,6
	Moderately disagree	46	4,7	5,6
	Strongly disagree	17	1,7	2,1
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 137: Professionals/Non-users - The health status of my patients improves with addition of telehealth (Q32)

The health status of my patients improves with the addition of telehealth to conventional health services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	167	4,5	5,6

	Moderately agree	455	12,2	15,3
	Neither agree nor disagree	2109	56,4	70,7
	Moderately disagree	154	4,1	5,2
	Strongly disagree	96	2,6	3,2
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

There is a weak association ($p=0.05$) between the gender of healthcare professionals and their perceptions on whether the health status of the patients improves with the adoption of telehealth services. Male healthcare professionals agreed more with this statement (Table 138).

Table 138: Professionals by gender - The health status of my patients improves with the addition of telehealth to conventional health services

Gender		The health status of my patients improves with the addition of telehealth to conventional health services					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Male	Count	57	108	112	15	7	299
	%	19.1%	36.1%	37.5%	5.0%	2.3%	100.0%
Female	Count	54	179	244	31	10	518
	%	10.4%	34.6%	47.1%	6.0%	1.9%	100.0%
Total	Count	111	287	356	46	17	817
	%	13.6%	35.1%	43.6%	5.6%	2.1%	100.0%

4.2.2.5.5 Impact of healthcare on health professionals' workload

Only 30% of healthcare professionals using telehealth see a reduction in their workload (Table 139) and 40% of the users disagree with the statement that 'telehealth helps to reduce workload', which implies that the addition of telehealth services increases the health professional workload. Only 10% of non-users indicated that telehealth would help them to reduce their workload (Table 140).

Table 139: Professionals/Users - Telehealth helps to reduce workload (Q34)

Telehealth helps to reduce my workload		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	51	5,2	6,2
	Moderately agree	197	20,2	24,1
	Neither agree nor disagree	243	24,9	29,7
	Moderately disagree	245	25,2	30,0
	Strongly disagree	81	8,3	9,9
	Total		817	83,9
Missing	System	157	16,1	
Total		974	100,0	

Table 140: Professionals/Non users - Telehealth helps to reduce workload (Q34)

Telehealth helps to reduce my workload		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	65	1,7	2,2
	Moderately agree	248	6,6	8,3
	Neither agree nor disagree	1673	44,8	56,1
	Moderately disagree	460	12,3	15,4
	Strongly disagree	535	14,3	17,9
	Total		2981	79,8
Missing	System	756	20,2	
Total		3737	100,0	

Table 141: Professionals by group- Telehealth helps to reduce my workload

		Telehealth helps to reduce my workload					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
General practitioner	Count	13	32	92	49	60	246
	%	5,3%	13,0%	37,4%	19,9%	24,4%	100,0%
Specialist Doctor in (please specify):	Count	23	66	129	64	68	350
	%	6,6%	18,9%	36,9%	18,3%	19,4%	100,0%
Nurse	Count	34	158	844	307	253	1596
	%	2,1%	9,9%	52,9%	19,2%	15,9%	100,0%
Specialist Nurse in (please specify):	Count	30	121	506	183	151	991
	%	3,0%	12,2%	51,1%	18,5%	15,2%	100,0%
Pharmacist	Count	5	19	154	43	33	254
	%	2,0%	7,5%	60,6%	16,9%	13,0%	100,0%
Other (please specify)	Count	11	49	191	59	51	361
	%	3,0%	13,6%	52,9%	16,3%	14,1%	100,0%
Total	Count	116	445	1916	705	616	3798
	%	3,1%	11,7%	50,4%	18,6%	16,2%	100,0%

A strong association ($p=0.002$) was observed between the gender of the healthcare professionals and whether they think that the adoption of telehealth reduced their workload. More male healthcare professionals indicated that telehealth reduces their workload compared to females (Table 142).

Table 142: Professionals by gender - Telehealth helps to reduce my workload

			Telehealth helps to reduce my workload					Total
			Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Gender	Male	Count	31	79	80	80	29	299
		%	10.4%	26.4%	26.8%	26.8%	9.7%	100.0%
	Female	Count	20	118	163	165	52	518
		%	3.9%	22.8%	31.5%	31.9%	10.0%	100.0%
Total		Count	51	197	243	245	81	817
		%	6.2%	24.1%	29.7%	30.0%	9.9%	100.0%

4.2.2.6 Patient – health professionals communication

The impact of telehealth on patient-health professionals' communication was identified as a major underlying element of trust and acceptance, and as such lies at the very heart of the Chain of Trust project. When it comes to the professionals' views on whether telehealth negatively affects the communication between patients and healthcare professionals, 22% of users (Table 143) and 29% of non-users (Table 144) agreed with the statement 'Telehealth affects negatively the communication between patients and health care professionals'. The majority of healthcare professionals using telehealth (52%) indicated that telehealth does not have a negative impact on the communication with patients, while only 38% of non-users think the same.

Table 143: Professionals/Users - Telehealth affects negatively the communication between patients and health care professionals (Q23)

Telehealth affects negatively the communication between patients and health care professionals		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	37	3,8	4,5
	Moderately agree	143	14,7	17,5
	Neither agree nor disagree	210	21,6	25,7
	Moderately disagree	319	32,8	39,0

	Strongly disagree	108	11,1	13,2
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 144: Professionals/Non users - Telehealth affects negatively the communication between patients and health care professionals (Q23)

Telehealth affects negatively the communication between patients and health care professionals		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	172	4,6	5,8
	Moderately agree	695	18,6	23,3
	Neither agree nor disagree	996	26,7	33,4
	Moderately disagree	920	24,6	30,9
	Strongly disagree	198	5,3	6,6
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

Regarding the communication with patients through telehealth applications, 68% of healthcare professionals using telehealth think that telehealth helps them to stay regularly in contact with patients (Table 145) while 55% of non-users have the same opinion (Table 146). Only 9% of users do not agree with this statement.

Table 145: Professionals/Users - Telehealth helps me stay more regularly in touch with patients (Q31)

Telehealth helps me stay more regularly in touch with patients		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	147	15,1	18,0
	Moderately agree	407	41,8	49,8
	Neither agree nor disagree	185	19,0	22,6
	Moderately disagree	54	5,5	6,6
	Strongly disagree	24	2,5	2,9
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 146: Professionals/Non-users- Telehealth helps me stay more regularly in touch with patients (Q31)

Telehealth helps me stay more regularly in touch with patients		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	384	10,3	12,9
	Moderately agree	1269	34,0	42,6
	Neither agree nor disagree	1002	26,8	33,6
	Moderately disagree	221	5,9	7,4
	Strongly disagree	105	2,8	3,5
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

40% of the healthcare professionals not using telehealth think that telehealth services are impersonal, while a lower percentage of users (34%) think the same (Table 147). 39% of users disagree with the statement that 'Telehealth consultations are impersonal', compared to 27% non-users (Table 148).

Table 147: Professionals/Users - Telehealth consultations are impersonal (Q24)

Telehealth consultations with patients are impersonal		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	69	7,1	8,4
	Moderately agree	211	21,7	25,8

	Neither agree nor disagree	222	22,8	27,2
	Moderately disagree	241	24,7	29,5
	Strongly disagree	74	7,6	9,1
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 148: Professionals/Non-users- Telehealth consultations are impersonal (Q24)

Telehealth consultations with patients are impersonal		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	306	8,2	10,3
	Moderately agree	887	23,7	29,8
	Neither agree nor disagree	979	26,2	32,8
	Moderately disagree	691	18,5	23,2
	Strongly disagree	118	3,2	4,0
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

It is clear that most healthcare professionals (88%) think that telehealth should not be an alternative to face-to-face contact with patients (Table 149). In this case only 8% of respondents had no opinion which makes this a very strong position taken by health professionals.

Table 149: Professionals - Telehealth should not replace face-to-face contact (Q38)

Telehealth should not replace face-to-face contact with patients where it is possible and appropriate.		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	1992	39,4	52,4
	Moderately agree	1355	26,8	35,7
	Neither agree nor disagree	293	5,8	7,7
	Moderately disagree	94	1,9	2,5
	Strongly disagree	64	1,3	1,7
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

4.2.2.7 Workplace

Health professional respondents are divided in their views on whether the workplace has sufficient technical facilities to provide telehealth services or not. 43% of them indicated that their workplace has sufficient technical facilities to provide telehealth while 38% think otherwise (Table 150).

Table 150: Professionals - Work place has sufficient technical facilities to provide telehealth services (Q35)

My work place has sufficient technical facilities (broadband internet, computers, etc.) to provide telehealth		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	486	9,6	12,8
	Moderately agree	1164	23,0	30,6
	Neither agree nor disagree	713	14,1	18,8
	Moderately disagree	733	14,5	19,3
	Strongly disagree	702	13,9	18,5
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

It is important to note that only 21% of healthcare professionals indicated that the management of their workplace promotes the use and implementation of telehealth. In contrast, 43% think this is

not the case (Table 151).

Table 151: Professionals - Management of my place of work promotes the use and implementation of telehealth (Q36)

The management of my place of work promotes the use and implementation of telehealth services		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	219	4,3	5,8
	Moderately agree	579	11,4	15,2
	Neither agree nor disagree	1346	26,6	35,4
	Moderately disagree	832	16,4	21,9
	Strongly disagree	822	16,3	21,6
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

It is equally important that 72% of the healthcare professionals who responded to the survey are willing to use telehealth in short to medium term (Table 152).

Table 152: Professionals - I am willing to use telehealth tools in the short to medium term

I am willing to use telehealth tools in the short to medium term		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	860	17,0	22,6
	Moderately agree	1854	36,7	48,8
	Neither agree nor disagree	845	16,7	22,2
	Moderately disagree	149	2,9	3,9
	Strongly disagree	90	1,8	2,4
	Total	3798	75,1	100,0
Missing	System	1260	24,9	
Total		5058	100,0	

We also looked at the relation between the promotion of telehealth by the workplace management and the willingness of healthcare professionals to use telehealth tools (Table 153). There is a strong relationship between these two variables as 80% of those who strongly agree with the statement that management was engaged in promoting and implementation of telehealth had a strong will to take up telehealth in the near future.

Table 153: Professionals - The management of my place of work promotes the use and implementation of telehealth services * I am willing to use telehealth tools in the short to medium term

The management of my place of work promotes the use and implementation of telehealth services		I am willing to use telehealth tools in the short to medium term					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Strongly agree	Count	175	28	10	2	4	219
	%	79,9%	12,8%	4,6%	0,9%	1,8%	100,0%
Moderately agree	Count	149	379	50	1	0	579
	%	25,7%	65,5%	8,6%	0,2%	0%	100,0%
Neither agree nor disagree	Count	194	651	436	49	16	1346
	%	14,4%	48,4%	32,4%	3,6%	1,2%	100,0%
Moderately disagree	Count	137	458	167	61	9	832
	%	16,5%	55,0%	20,1%	7,3%	1,1%	100,0%
Strongly disagree	Count	205	338	182	36	61	822
	%	24,9%	41,1%	22,1%	4,4%	7,4%	100,0%
Total	Count	860	1854	845	149	90	3798
	%	22,6%	48,8%	22,2%	3,9%	2,4%	100,0%

When it comes to the satisfaction of professionals' needs, only 18% of the healthcare professionals

not using telehealth think that telehealth services would fulfil their professional needs (Table 155). In contrast, 45% of those who use telehealth indicated that the telehealth services fulfil their professional needs (Table 154). Furthermore, we did not find any association between the health professionals' negative views and the difficulties in diagnosis when using telehealth.

Table 154: Professionals/Users-Telehealth services fulfil my professional needs (Q39)

Telehealth services fulfil my professional needs		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	79	8,1	9,7
	Moderately agree	287	29,5	35,1
	Neither agree nor disagree	275	28,2	33,7
	Moderately disagree	139	14,3	17,0
	Strongly disagree	37	3,8	4,5
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 155: Professionals/Non-users-Telehealth services fulfil my professional needs (Q39)

Telehealth services fulfil my professional needs		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	106	2,8	3,6
	Moderately agree	445	11,9	14,9
	Neither agree nor disagree	1745	46,7	58,5
	Moderately disagree	433	11,6	14,5
	Strongly disagree	252	6,7	8,5
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

Specialist doctors are the group of healthcare professionals most satisfied with telehealth in fulfilling their professional needs (61%) while only 34% of nurses agreed with the same statement (Table 156).

Table 156: Professionals by group - Telehealth services fulfil my professional needs

		Telehealth services fulfil my professional needs					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
General practitioner	Count	7	28	22	8	1	66
	%	10,6%	42,4%	33,3%	12,1%	1,5%	100,0%
Specialist Doctor in (please specify):	Count	21	43	25	13	2	104
	%	20,2%	41,3%	24,0%	12,5%	1,9%	100,0%
Nurse	Count	18	94	134	62	17	325
	%	5,5%	28,9%	41,2%	19,1%	5,2%	100,0%
Specialist Nurse in (please specify):	Count	13	91	68	49	10	231
	%	5,6%	39,4%	29,4%	21,2%	4,3%	100,0%
Pharmacist	Count	7	4	11	3	2	27
	%	25,9%	14,8%	40,7%	11,1%	7,4%	100,0%
Other (please specify)	Count	13	27	15	4	5	64
	%	20,3%	42,2%	23,4%	6,3%	7,8%	100,0%
Total	Count	79	287	275	139	37	817
	%	9,7%	35,1%	33,7%	17,0%	4,5%	100,0%

47% of healthcare professional users indicate that telehealth enables them to receive and provide sufficient information for patient care (Table 157); while 17% disagree with the statement (Table 158).

Table 157: Professionals/Users- Telehealth enables me to receive and provide sufficient information for

patient care (Q40)

Telehealth enables me to receive and provide sufficient information for patient care		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	110	11,3	13,5
	Moderately agree	349	35,8	42,7
	Neither agree nor disagree	219	22,5	26,8
	Moderately disagree	116	11,9	14,2
	Strongly disagree	23	2,4	2,8
	Total	817	83,9	100,0
Missing	System	157	16,1	
Total		974	100,0	

Table 158: Professionals/Non-users- Telehealth enables me to receive and provide sufficient information for patient care (Q40)

Telehealth enables me to receive and provide sufficient information for patient care		Frequency	Percentage	Valid Percentage
Valid	Strongly agree	176	4,7	5,9
	Moderately agree	844	22,6	28,3
	Neither agree nor disagree	1416	37,9	47,5
	Moderately disagree	378	10,1	12,7
	Strongly disagree	167	4,5	5,6
	Total	2981	79,8	100,0
Missing	System	756	20,2	
Total		3737	100,0	

We also observed a strong relation ($p=0.004$) between the gender of health professionals and whether they agree with telehealth enabling them to receive and provide enough information for patient care. Male healthcare professionals agreed with this statement more often than their female colleagues (Table 159).

Table 159: Professionals by gender - Telehealth enables me to receive and provide sufficient information for patient care (Q40)

Gender		Telehealth enables me to receive and provide sufficient information for patient care					Total
		Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	
Male	Count	54	136	71	33	5	299
	%	18.1%	45.5%	23.7%	11.0%	1.7%	100.0%
Female	Count	56	213	148	83	18	518
	%	10.8%	41.1%	28.6%	16.0%	3.5%	100.0%
Total	Count	110	349	219	116	23	817
	%	13.5%	42.7%	26.8%	14.2%	2.8%	100.0%

4.2.3 Summary of the findings regarding healthcare professionals’ perspective

All the above-mentioned statements presented were rated from ‘strongly disagree’ (1) to ‘strongly agree’ (5) by the respondents with reference to their personal experiences or perceptions in relation to telehealth services. The analysis focused on the users and the non-users of telehealth and identified the similarities and differences in perception. The findings can be grouped into six themes:

1. Competence

Key finding:

- Health professionals are less confident that patients have the right skillset required for them to be able to use telehealth effectively and safely.
- Training is key to ensuring health professionals are appropriately equipped to use telehealth and as such, it is a key driver of acceptance. Health professionals who have received training on telehealth think that telehealth services and applications are not difficult to use, while this tends not to be the case for health professionals who did not receive any training.

Detailed findings:

- Only 29% of healthcare professionals think that patients are sufficiently competent to use telehealth tools. 39% of user respondents think that their patients are competent to use telehealth tools, while only 17% of non-users agree with the statement. 38% of user and 52% of non-user healthcare professional respondents disagree with the statement that patients are sufficiently competent to use telehealth tools. Males more often think that patients are competent to use telehealth tools.
- 56% of user healthcare professionals find telehealth easy to use, compared to only 30% of the non-users who indicated that telehealth would be easy to use.
- 62% of those who received training in the past three years indicated that those applications are not difficult to use compared to 36% of those who did not have any training.
- 45% of users think that they have been adequately trained to use telehealth tools, while 38% of users think that they do not have sufficient training.
- Healthcare professionals who do not use telehealth agree with patients who think they are not sufficiently trained.

2. Confidentiality

Key finding:

- Health professionals largely agree with patients in saying that confidentiality is not a problematic issue in telehealth

Detailed findings:

- 15% of users and 17% of non-users indicated that telehealth affects the confidentiality of data negatively.
- 66% of users and 52% of non-users disagreed with the statement 'telehealth affects negatively the confidentiality of data'.

3. Safety

Key finding:

- Health professionals who are users of telehealth tend to think that telehealth does not undermine patient safety and, although to a less extent, diagnosis accuracy, but think at the same time that telehealth makes it more difficult for them to evaluate the physical and emotional condition of the patients. The latter is shared by non-users, who, however, are in general more sceptical as regards safety and accuracy of diagnosis.

Detailed findings:

- 46% of the users and 30% of non-users think that telehealth is as safe as conventional face-to-face healthcare services. In contrast, 29% of users find telehealth less safe than face-to-face services.
- 54% of users and 59% of non-users indicated that, when using telehealth, it is difficult to evaluate the physical and emotional condition of the patients. This result is similar to the findings from patients' data.
- 43% of users and 31% of non-users of healthcare professionals think that diagnosis, treatment and care with telehealth are as accurate as with face-to-face consultations. However, 32% of users and 37% non-users did not agree with this statement.

4. Benefits

Key finding:

- Healthcare professionals think that telehealth carries the potential for improving access to healthcare, at least geographic-wise. They also think that telehealth can improve cooperation between health professionals and increases the quality of healthcare they deliver.
- Health professionals indicated that telehealth does not contribute to decreasing their workload, but actually generate more workload for a health professional.
- Interestingly, health professionals tend to agree with patients on the fact that telehealth can be instrumental in fostering patient adherence to treatment.

Detailed findings:

- 81% of healthcare professionals (87% users) think that telehealth improves access to healthcare for patients living in underserved areas.
- 65% of the professionals think that telehealth improves access to health services for vulnerable patients groups.
- 64% of the professionals (78% of users) think that telehealth improves cooperation among healthcare professionals.
- 70% of the healthcare professionals (85% of users and 64% of non-users) think that telehealth increases the quality of the health services.
- 60% of the professionals agreed that telehealth improves adherence.
- 68% of users and 55% of non-users think that telehealth helps them to stay regularly in contact with their patients.
- 30% of users agreed while 40% disagreed with the statement that 'telehealth helps to reduce workload'. Only 10% of non-users indicated that telehealth would help them to reduce their workload.
- More male healthcare professionals indicated that telehealth reduces their workload compared to females

5. Impact of telehealth on patient-professionals communication

Key finding:

- While there is general agreement among health professionals that telehealth should not fully replace face-to-face contacts with patients, which is a fundamental element behind maintaining mutual trust and fostering acceptance, they also think that telehealth does not have a negative impact on the communication with patients. There are no conclusive findings as to whether health professionals think that telehealth leads to more impersonal communication with patients.

Detailed findings:

- The majority of healthcare professionals using telehealth (52%) indicated that telehealth does not have a negative impact on the communication with patients, while only 38% of non-users agreed.
- 40% of non-users think that telehealth services are impersonal, while a lower percentage (34%) of users thought the same. 39% of users disagreed with the statement that 'Telehealth consultations are impersonal', compared to 27% of non-users.
- Great majority of healthcare professionals think that telehealth should not replace face-to-face contact with patients.

6. Workplace

Key findings:

- The high majority of health professionals would be willing to use telehealth in the short-medium term. This is somehow in contrast with the fact that only a small minority of health professionals think that telehealth fulfil/could fulfil their professional needs. This applies to both users and non-users of telehealth.
- Most healthcare professionals indicated that the management of their work place does not promote the use and implementation of telehealth.

Detailed findings:

- 43% indicated that their workplace had sufficient technical facilities to provide telehealth while 38% think this is not the case.
- 21% of healthcare professionals indicated that the management of their work place promotes the use and implementation of telehealth, while 43% think this is not the case.
- 72% of the healthcare professionals are willing to use telehealth in short to medium term.
- When it comes to satisfaction of professional needs, only 18% of the users think that telehealth services fulfil their professional needs. In contrast, 45% of users indicated that the telehealth services fulfil their professional needs.
- The majority of users indicated that telehealth enables them to receive and provide sufficient information for patient care, while 17% disagreed with the statement.
- 79% of the healthcare professionals think that telehealth is a valid complement to conventional health services.

4.3 Associations between patients’ and health professionals’ responses

Following results stemmed from the analysis of the associations measured between patients’ and health professionals’ responses we can conclude that:

- 1) In relation to the health status of patients, 42.7% of telehealth (both health professionals and patients) users think that patients’ health status improves with the addition of telehealth to conventional health services. Only 18.4% of non-users agreed with this statement. However, 20% of users think that patients’ health status improves, opposed to 13% of non-users who thought the same.
- 2) Non-users are more sceptical than users but through training and involvement in the use of such services, they become potential advocates of telehealth.
- 3) Training is key to the acceptance and use of telehealth services.
- 4) There is still the need to better communicate the benefits and variety of telehealth services to the wider public.
- 5) There is a need to further investigate the impact of telehealth on patient-professional interaction. This aspect, albeit crucial, is often neglected in assessing the efficiency and effectiveness of telehealth and no definitive conclusions have emerged out of this survey.

Table 160: Comparison of common questions for patients and healthcare professionals

	Statements	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree
Patients	Telehealth affects negatively the confidentiality of data	3,60%	14,00%	49,10%	22,60%	10,70%
Professionals		2,20%	14,30%	28,10%	42,90%	12,60%
Patients	Telehealth improves access to healthcare particularly for patients living in underserved areas	36,00%	39,30%	20,00%	2,70%	2,00%
Professionals		29,30%	51,80%	11,40%	5,50%	1,90%
Patients	Telehealth improves access to health services for disadvantaged patients	29,10%	37,90%	23,00%	5,90%	4,10%
Professionals		29,30%	51,80%	11,40%	5,50%	1,90%
Patients	Telehealth services are easy to use	12,60%	26,30%	52,00%	7,10%	2,00%
Professionals		6,70%	29,00%	49,90%	12,10%	2,30%
Patients	Telehealth is as safe as conventional face-to-face health services	7,30%	23,80%	47,40%	16,30%	5,10%
Professionals		5,40%	27,70%	36,80%	24,00%	6,10%
Patients	Telehealth affects negatively the communication between patients and health professionals	4,90%	17,00%	45,80%	24,00%	8,30%
Professionals		5,50%	22,10%	31,80%	32,60%	8,10%
Patients	Telehealth consultations with health professionals/patients are impersonal	10,20%	28,20%	40,40%	17,00%	4,30%
Professionals		9,90%	28,90%	31,60%	24,50%	5,10%
Patients	When using telehealth it is difficult for the health professional to evaluate my/patient's physical and emotional conditions	16,00%	37,80%	32,70%	11,30%	2,20%
Professionals		13,90%	44,10%	26,50%	14,20%	1,30%
Patients	Telehealth is a valid complement to conventional healthcare services	27,10%	44,70%	23,90%	2,80%	1,50%
Professionals		24,40%	55,00%	16,70%	3,00%	0,90%
Patients	Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services	4,10%	20,70%	42,00%	25,80%	7,40%

Professionals		6,00%	27,40%	30,80%	28,60%	7,10%
Patients	Telehealth helps to increase the quality of health services	16,70%	41,90%	32,20%	6,60%	2,70%
Professionals		18,10%	50,70%	23,90%	5,50%	1,80%
Patients	The addition of telehealth to conventional health services improves my/patient's adherence to treatment and care	15,50%	36,40%	38,80%	6,30%	3,00%
Professionals		15,50%	44,80%	31,40%	6,70%	1,60%
Patients	Telehealth helps me stay more regularly in touch with health professionals/patients	19,30%	41,70%	32,20%	4,50%	2,20%
Professionals		14,00%	44,10%	31,30%	7,20%	3,40%
Patients	The health status of my patients improves with the addition of telehealth to conventional health services	7,80%	12,00%	67,10%	6,20%	6,90%
Professionals		7,30%	19,50%	64,90%	5,30%	3,00%
Patients	I am willing to use telehealth services in the short to medium term	20,30%	41,30%	31,50%	4,00%	2,90%
Professionals		22,60%	48,80%	22,20%	3,90%	2,40%
Patients	Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate.	46,00%	30,50%	20,60%	1,80%	1,20%
Professionals		52,40%	35,70%	7,70%	2,50%	1,70%

It is difficult to draw any conclusions from these percentages. Nevertheless, this distribution is the basis for further analysis. For the in-depth analysis of the results of the online survey we opted for Cluster Analysis.

5. Visualising Patterns of Views and Perceptions – Cluster Analysis

5.1 What is a cluster analysis and why did we use it?

Going beyond frequencies, cross-tabulations, associations and significance levels, the second phase of the analysis displays the patterns in the respondents' perceptions and experiences. The cluster analysis technique is based on the assignment of a set of observations into various subsets (clusters) aligning data that is similar or different in some sense (positive perceptions and negative perceptions or barriers and facilitators). Cluster analysis is widely used when working with multivariate data and helps analysing the different data sets in a comparative way. Therefore, we started with visualising the patients' and health professionals' views separately. Subsequently we merged the two datasets which allowed us to go beyond thinking about themes and concepts as described in the previous chapters, to focus more on 'what makes patients and health professionals think similar/different'.

We opted for a hierarchical cluster analysis beginning with separating each case into a cluster by itself. At each stage of the analysis (iterations), the criterion by which cases are separated is lowered as threshold in order to link the two most similar clusters until all indicators are joined in a complete classification tree. The basic criterion for clustering is distance. Objects that are close to one another should belong to the same cluster, and objects that are far from one another should belong to different clusters.

We will make use of dendrograms ("tree-diagrams") to give the visual representation of the steps in a hierarchical clustering solution showing the clusters being combined and the values of the distance coefficients at each step. Connected vertical lines designate joined indicators. The dendrograms rescale the actual distances to numbers between 0 and 25, preserving the ratio of the distances between steps.

Out of these three tables, we focused on specific segments of the data that were mainly indicated by the partners as important. Within this context, a better understanding of the relationships between different groups, within and between, is achieved.

5.2 Patients' Views and Experiences

Before starting the analysis of their views and experiences, let us remember the characteristics of the patients' sample:

Table 161: Patients – Crosstabulation: Gender * Age* Highest education level attained

Gender * Age * Highest education level attained Crosstabulation

Count

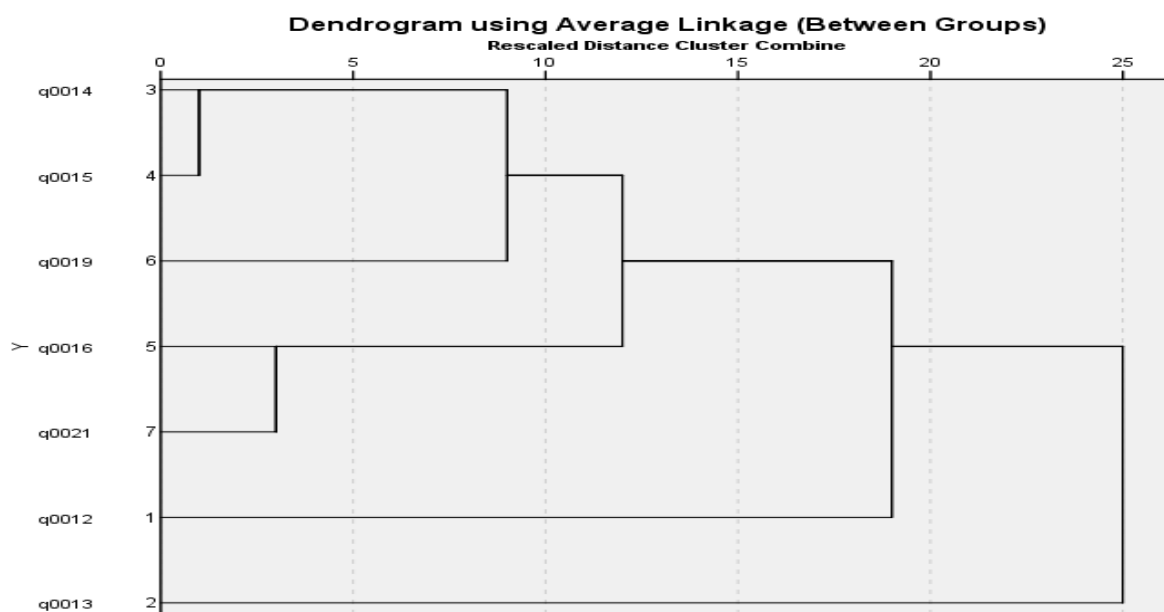
Highest education level attained			Age						Total
			0-15	16-24	25-34	35-49	50-65	>65	
Level 1: Primary education	Gender	Male	3	3	1	5	1	1	14
		Female	6	5	3	7	1	3	25
	Total		9	8	4	12	2	4	39
Level 2: Lower secondary education	Gender	Male	2	4	8	8	7	1	30
		Female	1	13	4	12	12	3	45
	Total		3	17	12	20	19	4	75
Level 3-4: Upper secondary education or Post-secondary non-t	Gender	Male	1	22	38	60	49	8	178
		Female	1	30	58	108	54	12	263
	Total		2	52	96	168	103	20	441
Level 5: Tertiary education (first stage) - university-level	Gender	Male	0	11	57	62	52	17	199
		Female	1	46	179	203	105	17	551
	Total		1	57	236	265	157	34	750
Level 6: Tertiary education (second stage) - further univers	Gender	Male	1	1	30	27	32	11	102
		Female	1	11	68	99	45	11	235
	Total		2	12	98	126	77	22	337
Total	Gender	Male	7	41	134	162	141	38	523
		Female	10	105	312	429	217	46	1119
	Total		17	146	446	591	358	84	1642

The first dendrogram (**Error! Reference source not found.**) is based on the following seven variables from the patients’ questionnaire:

- PQ12: “How familiar are you with telehealth services?”
- PQ13: “Do you know whether telehealth services exist in your area?”
- PQ14: “Were you ever involved in testing or setting up a telehealth service?”
- PQ15: “Have you ever followed any training on telehealth in the last three years?”
- PQ16: “Have you ever received health services with the support of telehealth?”
- PQ19: “How would you rate your experience with telehealth?”
- PQ21: “Are you still using this service?”

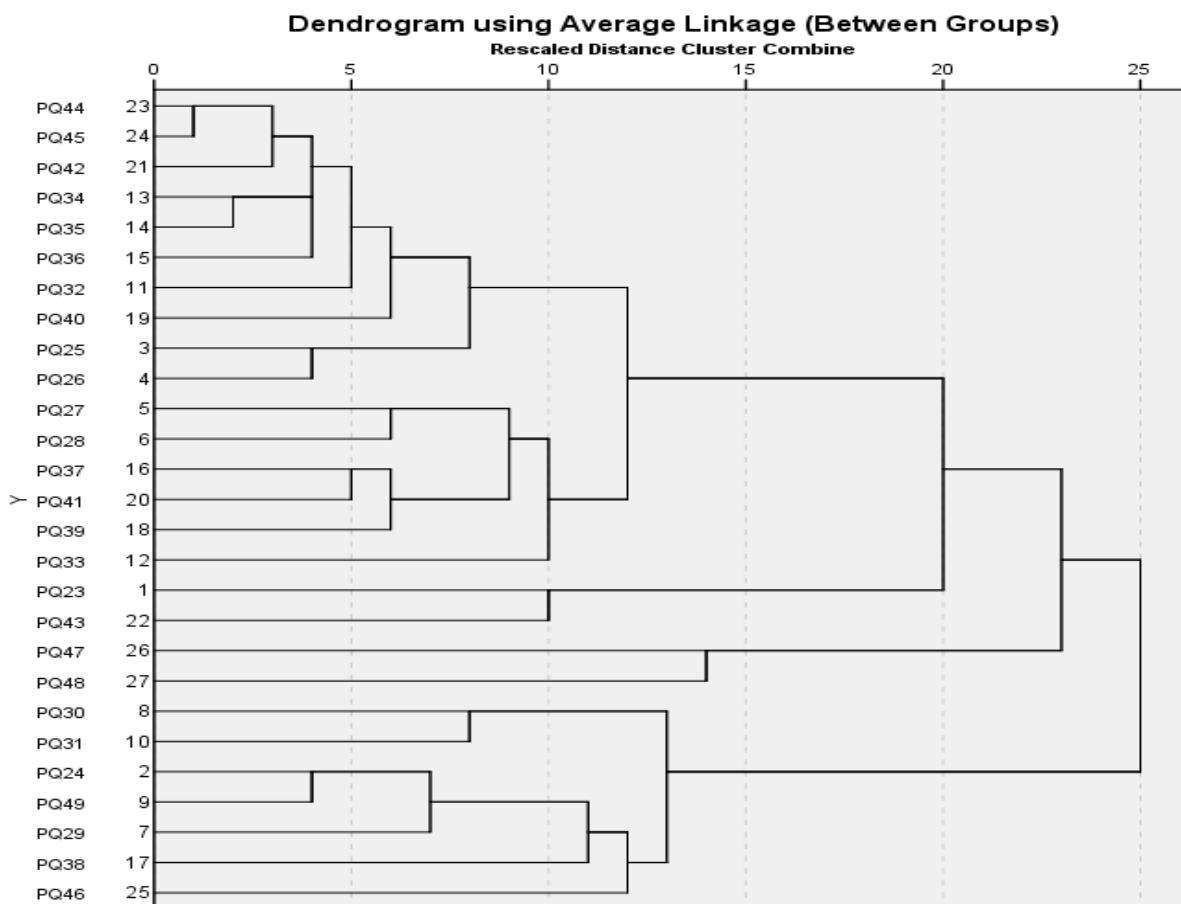
In the dendrogram, we see that testing (PQ14) and training (PQ15) are the two closest variables that go together. This cluster, first of all, joins to the respondents’ ratings of their experience with telehealth (PQ19) and then adds up with another cluster made up of two indicators – namely, ‘ever received telehealth services’ (PQ16) and ‘still using the telehealth services’ (PQ21). Responses to these questions are quite irrelevant to the respondents being familiar with telehealth (PQ12) and whether the respondents know if telehealth services exist in their area (PQ13). This means that patients’ responses need to be interpreted within a framework of ‘general lack of familiarity’ with telehealth services.

Figure 7: Dendrogram – Patients’ Questions 12, 13, 14, 15, 16, 19, 21



Subsequently, all statements rated by patients on a Likert Scale are clustered (**Error! Reference source not found.**). At this stage it is important to identify patterns which can lead to a higher level of interpretation compared to frequency tables and cross tables – which are only descriptive.

Figure 8: Dendrogram – Patients’ Questions from 23 to 49



Based on this dendrogram, we can classify patients’ responses in five clusters:

Cluster 1 is made up of the following ten statements:

- PQ44: “The addition of telehealth to conventional health services improves my quality of life”
- PQ45: “Telehealth helps me improve my knowledge of my health condition”
- PQ42: “I am willing to use telehealth services in the short to medium term”
- PQ34: “Telehealth helps to increase the quality of health services”
- PQ35: “The addition of telehealth to conventional health services improves my adherence to treatment and care”
- PQ36: “Telehealth helps me stay more regularly in touch with health professionals”
- PQ32: “Telehealth is a valid complement to conventional healthcare services”
- PQ40: “Telehealth helps me save money I spend on healthcare (less travel, less inpatient visits, less hours off-work, etc.)”
- PQ25: “Telehealth improves access to healthcare particularly for patients living in underserved areas”
- PQ26: “Telehealth improves access to health services for disadvantaged patients”

We see that, first of all, PQ44 ‘addition improves quality of life’ and PQ45 ‘improves my knowledge of my health condition’ cluster together and then join with PQ42 ‘willing to use telehealth in the short to medium term’. Secondly, two items – namely PQ34 ‘increases quality of health services’ and PQ35 ‘addition improves adherence’ – come together and then merge with PQ36 ‘telehealth helps to stay more regularly in touch with HCPs’. After these two clusters merge, they are joined up by PQ32 ‘valid complement to conventional healthcare services’, PQ40 ‘saves money’ and another couple of statements, PQ25 ‘telehealth improves access to healthcare for patients in underserved areas’, and PQ26 ‘telehealth improves access to healthcare for disadvantaged patients’.

Clearly **Cluster 1** groups together the views and experiences on the theme ‘benefits of telehealth’. From the graph we can see that not much iteration was needed to group these items together. In this case, the response pattern of the item PQ44 ‘quality of life’ and PQ45 ‘knowledge’ are very similar, as is the pattern for PQ34 ‘quality of health services’ and PQ35 ‘adherence’. In this cluster, the item PQ25 ‘underserved areas’ and PQ26 ‘disadvantaged patients’ are seen as benefits but it takes some time before they join the cluster, implying that their response distribution is different. This can be explained by the patients’ demographic data as the patient respondents’ profile is highly educated, middle-class, and living close to the health service delivery. The items PQ36 ‘more regularly in touch with HCPs’, PQ32 ‘valid complement to conventional healthcare services’ and PQ40 ‘saves money’ give signals of ‘strong benefits’ as they stay a long time on their own before joining other items within **Cluster 1**. This cluster stays alone for 12 iterations before joining **Cluster 2**.

Cluster 2 is made up of the following six statements:

- PQ27: “Telehealth services are easy to use”
- PQ28: “Telehealth is as safe as conventional face-to-face health services”
- PQ37: “My health status improves with the addition of telehealth to conventional health services”
- PQ41: “Using telehealth my family/relatives are less concerned about my health status”
- PQ39: “Telehealth fits into my daily life”

- PQ33: “Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services”

First little cluster groups PQ27 ‘telehealth is easy to use’ and PQ28 ‘telehealth is as safe as conventional healthcare’, and then joins with another cluster made up of PQ37 ‘health status improves with addition telehealth’, PQ41 ‘family/relatives are less concerned’ and PQ39 ‘fits into daily life’. Finally, after a number of iterations, these two sets of items join with PQ33 ‘HCPs can draw conclusions as accurate as they would through conventional healthcare’. Given the variables it groups, **Cluster 2** is clearly about the ‘daily use of telehealth’.

Clusters 1 and 2 join after 12 iterations. This implies that the views on the daily life operations and the benefits for the patients are concepts that are close. This is a good signal showing that it is worthwhile investing in telehealth. **Cluster 3** consists of only two statements:

- PQ23: “Generally speaking, I am willing to play a more active role in managing my health condition”
- PQ43: “Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate”

Here, the message from the patients is very clear: “I am willing to manage my condition if face-to-face contacts between patients and health professionals prevail in the management process.”

Cluster 4 also consists of two statements:

- PQ47: “I am ready to pay more for my health services if telehealth leads to other benefits”
- PQ48: “I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits”

This cluster clearly indicates that patients are willing to make compromises in order to benefit the opportunities offered by telehealth services. This is an important outcome of the patients’ survey, especially knowing that **Cluster 3** will join Clusters 1 and 2 first (since they are closer in distance), and then to Cluster 4.

Furthermore, Clusters 3 and Cluster 4 are very clear signals in the sense that they consist of items of which we would expect to be joined with other items at a much earlier stage of the iterations.

Cluster 5 stands on its own and consists of the following seven statements:

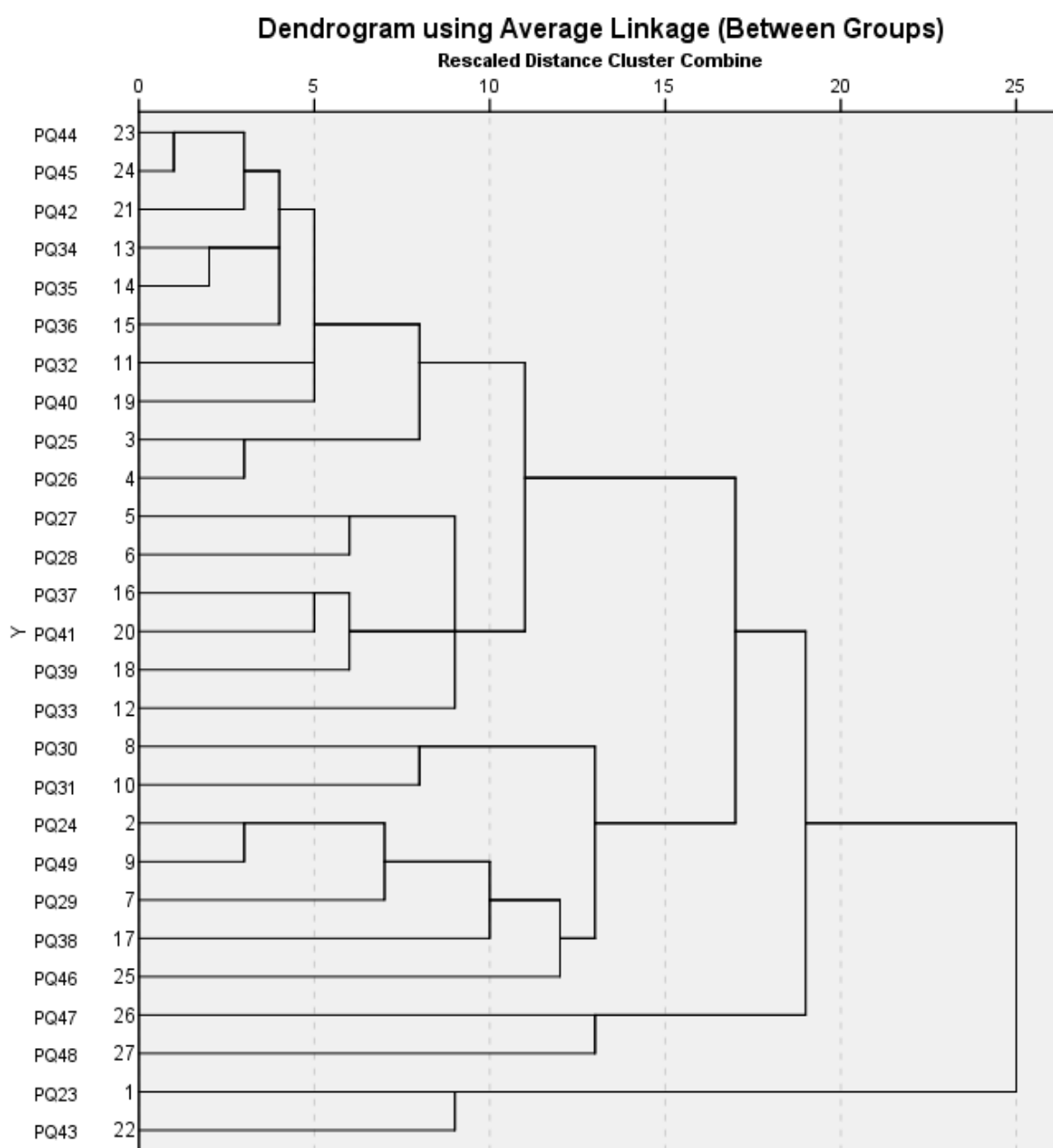
- PQ30: “Telehealth consultations with health professionals are impersonal”
- PQ31: “When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions”
- PQ24: “Telehealth affects negatively the confidentiality of data”
- PQ49: “Telehealth services affect my privacy negatively”
- PQ29: “Telehealth affects negatively the communication between patients and health professionals”
- PQ38: “Telehealth involves too much responsibility on my shoulders for managing my health condition”
- PQ46: “I am concerned about the expertise of the professionals who monitor my health status through telehealth”

In **Cluster 5**, first of all, the statements PQ30 ‘telehealth is impersonal’ and PQ31 ‘difficult for HCPs

to evaluate my physical and emotional conditions using telehealth' come together. This little cluster then joins to another little cluster made up of PQ24 'telehealth affects confidentiality of data negatively', PQ31 'telehealth affects my privacy negatively', PQ29 'telehealth affects the communication between patients and HCPs negatively', PQ38 'telehealth involves too much responsibility on my shoulders' and finally PQ46 'concerned about the expertise of the professionals in using telehealth'. **Cluster 5** brings together all negative formulated statements. It is logical that these items group together as they follow a different distribution pattern.

In order to correct for this artificial clustering of negatively formulated questions, we recoded the variables PQ30, PQ31, PQ24, PQ49, PQ29, PQ38, and PQ46 and performed the Cluster Analysis again. In this way we were able to integrate these negatively-worded statements into the rest of the clusters and see the real clustering of the variables (**Error! Reference source not found.**):

Figure 9: Dendrogram – Patients' Questions from 23 to 49 (negative statements recoded)



Cluster 1 brings together PQ44 'addition of telehealth improves quality of life', PQ45 'telehealth improves my knowledge of my health condition', PQ42 'willing to use telehealth services in the short to medium term' PQ34 'increases quality of health services' and PQ35 'addition improves adherence'. PQ36 'helps to stay more regularly in touch with HCP', PQ32 'valid complement to conventional healthcare services', PQ40 'saves money', PQ25 'underserved areas', and PQ26 'disadvantaged patients' are added to this cluster as well. In short, we have the exact same cluster, which means that the recoding exercise did not have any impact on Cluster 1.

Cluster 2 groups together PQ27 'telehealth is easy to use' and PQ28 'telehealth is as safe as conventional healthcare', PQ37 'health status improves with addition telehealth', PQ41 'family/relatives are less concerned', PQ39 'fits into my daily life' and finally, after some iterations, PQ33 'HCPs can draw conclusions as accurate'. Cluster 2 did not change either after the recoding which implies that the views of the patients on these two items are very clear.

On the other hand, **Cluster 3** became the previous Cluster 5, consisting of PQ30 'telehealth consultations are impersonal', PQ31 'difficult for HCPs to evaluate my physical and emotional conditions', PQ24 'affects negatively confidentiality data', PQ49 'affects negatively my privacy', PQ29 'affects the communication between patients and HCPs negatively', PQ38 'involves too much responsibility on my shoulders' and PQ46 'concerned about the expertise of the professionals monitoring my health status through telehealth'. Thus, this is exactly the same cluster even though it is recoded. The only difference is that, now that it is recoded, Cluster 3 joins to clusters 1 and 2 much sooner than it did in the previous analysis, while clusters 4 and 5 stay more 'independent'.

It is important to mention that previous Cluster 4 stays as **Cluster 4** with the statements PQ47 'ready to pay more if leads to other benefits' and PQ48 'can compromise on certain aspects of my privacy if telehealth leads to other benefits'. On the other hand, previous Cluster 3 becomes **Cluster 5** consisting of PQ23 'willing to play a more active role in managing my health condition' and PQ43 'telehealth should not replace face-to-face contact', as the last cluster to merge with others.

5.3 Healthcare Professionals' Views and Experiences

The same method of analysis is used for analysing the healthcare professionals' views and experiences. Note that some statements in the professionals' questionnaire are formulated in the same way as some the statements in the patients' questionnaire. Therefore, special attention is paid for these common statements as we wanted to know how both groups differentiate from or resemble each other when it comes to telehealth.

First of all, let us remember the characteristics of the health professional sample prior to analysing their views and experiences:

Figure 10: Professionals – Cross-tabulation: Type of profession * Age * Gender

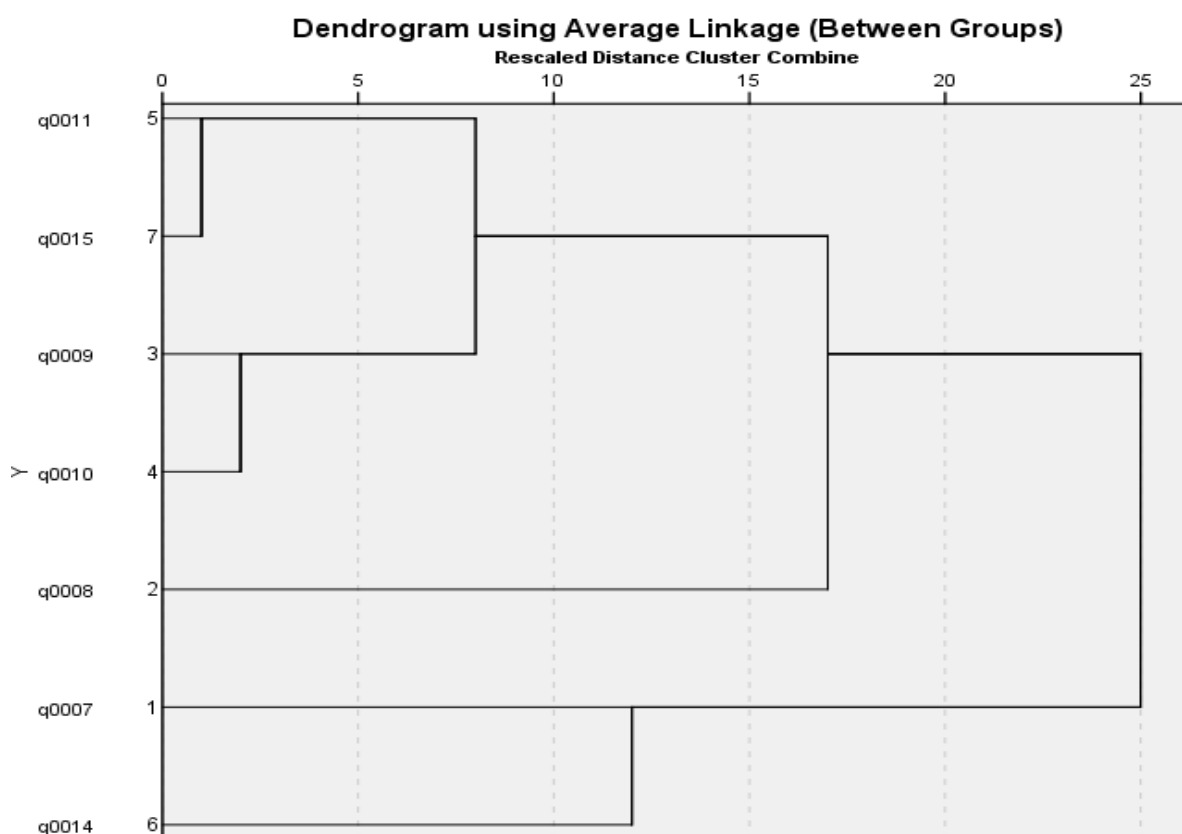
I am * Age * Gender Crosstabulation

Count			Age					Total
Gender	I am		0-24	25-34	35-49	50-64	<65	
Male	I am	General practitioner	2	20	45	73	8	148
		Specialist Doctor in (please specify):	1	25	67	80	16	189
		Nurse	64	241	144	51	5	505
		Specialist Nurse in (please specify):	4	75	170	76	0	325
		Pharmacist	2	32	34	41	3	112
		Other (please specify)	7	41	61	49	7	165
Total			80	434	521	370	39	1444
Female	I am	General practitioner	2	22	68	67	3	162
		Specialist Doctor in (please specify):	0	32	102	95	11	240
		Nurse	265	634	531	209	9	1648
		Specialist Nurse in (please specify):	4	169	501	250	8	932
		Pharmacist	5	76	98	78	5	262
		Other (please specify)	14	99	138	110	4	365
Total			290	1032	1438	809	40	3609
Total	I am	General practitioner	4	42	113	140	11	310
		Specialist Doctor in (please specify):	1	57	169	175	27	429
		Nurse	329	875	675	260	14	2153
		Specialist Nurse in (please specify):	8	244	671	326	8	1257
		Pharmacist	7	108	132	119	8	374
		Other (please specify)	21	140	199	159	11	530
Total			370	1466	1959	1179	79	5053

The first dendrogram (**Error! Reference source not found.**) is based on the following seven variables from the professionals' questionnaire with regard to their familiarity with telehealth:

- HCPQ7: "How familiar are you with telehealth services?"
- HCPQ8: "Are there telehealth services at your workplace?"
- HCPQ9: "Were you ever involved in testing or setting up a telehealth service?"
- HCPQ10: "Have you ever followed any training on telehealth in the last three years?"
- HCPQ11: "Have you ever provided health services with the support of telehealth?"
- HCPQ14: "How would you rate your experience with telehealth?"
- HCPQ15: "Are you still providing health services with the support of telehealth?"

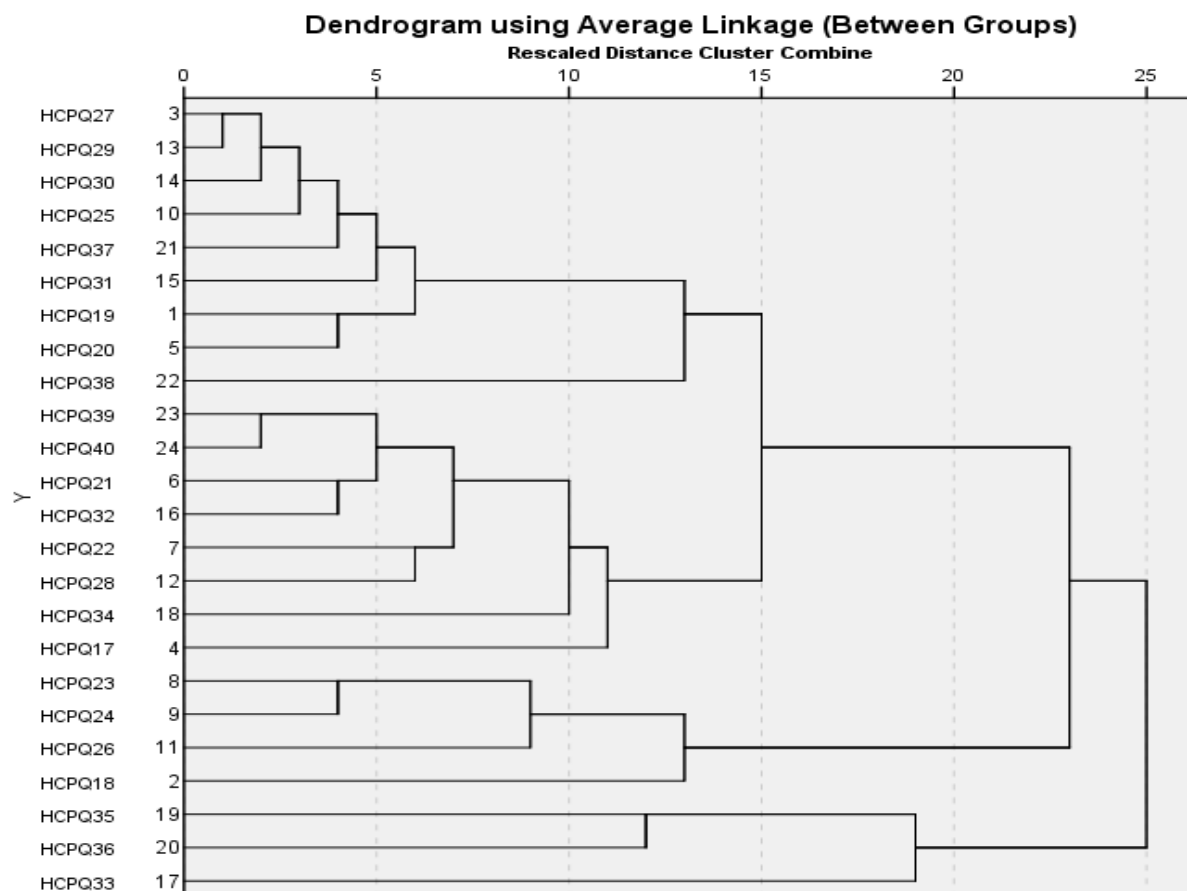
Figure 11: Dendrogram – Professionals' Questions 7, 8, 9, 10, 11, 14, 15



In the dendrogram above, we see that the questions about having ever provided (HCPQ11) and whether still providing (HCPQ14) healthcare through telehealth join very quickly. This little cluster immediately merges with another one made up of who variables regarding participation to any testing (HCPQ9) or training (HCPQ10) with regard to telehealth services, which shows that these two clusters are strongly linked. These two clusters meet with the availability of telehealth in the respondents' workplaces (HCPQ8), and finally with the final cluster consisting of familiarity with telehealth (HCPQ7) and rating of the experiences with telehealth (HCPQ14). Responses to these last two questions on being familiar with telehealth and rating of their experiences are relatively less relevant to the respondents' other responses to the other questions in the analysis. As such we have a healthcare professional sample that rated their experience with telehealth low and are not familiar with telehealth since they are not exposed to telehealth in their workplaces. Nevertheless, the provision of telehealth services is seen in close link with testing before using and consequently training.

Based on this profile of the health professionals expressing their views, their responses to the statements can be analysed:

Figure 12: Dendrogram – Questions from 17 to 40



Overall, we identified **FOUR** clusters of statements:

Cluster 1 consists of the following nine statements:

- HCPQ27: “Telehealth is a valid complement to conventional health service”
- HCPQ29: “Telehealth helps to increase the quality of health services”
- HCPQ30: “The addition of telehealth to conventional health services improves patients’ adherence to treatment and care”
- HCPQ25: “Telehealth improves cooperation among health professionals”
- HCPQ37: “I am willing to use telehealth tools in the short to medium term”
- HCPQ31: “Telehealth helps me stay more regularly in touch with patients”
- HCPQ19: “Telehealth improves access to healthcare particularly for patients living in underserved areas”
- HCPQ20: “Telehealth improves access to health services for vulnerable patient groups (old, seriously sick, socioeconomically disadvantaged, etc.)”
- HCPQ38: “Telehealth should not replace face-to-face contact with patients where it is possible and appropriate”

This cluster brings the statements HCPQ19 ‘underserved areas’, HCPQ20 ‘vulnerable patients’, HCPQ25 ‘improves cooperation HCP’, HCPQ27 ‘valid complement’, HCPQ29 ‘increase quality health

services’, HCPQ30 ‘adherence’, HCPQ31 ‘regularly in touch with patients’, HCPQ37 ‘use in short/medium term’ together quite quickly, to which HCPQ38 ‘not replace conventional healthcare’ is added at a later state.

Cluster 1 shows very clearly that, according to health professionals, telehealth is a valid complement to conventional healthcare services, it increases quality of care, it increases patients’ adherence, improves cooperation among HCPs, increases contact with patients – especially in underserved areas and access for vulnerable patient groups. Consequently, the professionals are willing to use telehealth tools in the short to medium term. After certain iterations, the views of the HCPs on the items merge with the statement that these can be achieved on the condition that telehealth does not replace face-to-face contact with patients, which is a very strong message coming from the data.

Cluster 2 is made up of the following eight items:

- HCPQ39: “Telehealth services fulfil my professional needs”
- HCPQ40: “Telehealth enables me to receive and provide sufficient information for patient care”
- HCPQ21: “Telehealth applications are easy to use”
- HCPQ32: “The health status of my patients improves with the addition of telehealth to conventional health services”
- HCPQ22: “Telehealth is as safe as conventional face-to-face health services”
- HCPQ28: “Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations”
- HCPQ34: “Telehealth helps to reduce my workload”
- HCPQ17: “Patients are sufficiently competent to use telehealth tools”

It brings together eight variables of which HCPQ39 ‘professional needs’ and HCPQ40 ‘sufficient information for patient care’ group quite quickly together, followed by HCPQ21 ‘easy to use’ and HCPQ32 ‘telehealth as addition to conventional improves health status’ and then HCPQ22 ‘as safe as conventional face-to-face’ and HCPQ28 ‘accurate’. Two more items will join the **Cluster 2**, but stay quite independent due to a different answering pattern, namely HCPQ34 ‘reducing HCP workload’ and HCPQ17 ‘patient sufficient competent’.

It is clear that the patterns in how the clusters are formed, is different between cluster 1 and Cluster 2. For Cluster 1, HCPQ27 ‘valid complement’ and HCPQ29 ‘increase the quality’ join very quickly together with gradually joining the other items. Instead, in Cluster 2 pairs are formed first and gradually joining afterwards. It is important to mention that Cluster 1 and Cluster 2 will be joining each other at a distance of 15 iterations.

Cluster 3 consists of the following four statements:

- HCPQ23: “Telehealth affects the communication between patients and health care professionals negatively”
- HCPQ24: “Telehealth consultations with patients are impersonal”
- HCPQ26: “When using telehealth the physical and emotional conditions of the patient are difficult to evaluate”
- HCPQ18: “Telehealth affect the confidentiality of data negatively”

First of all, HCPQ23 ‘affects communication between patients and HCPs negatively’ and HCPQ24

'telehealth is impersonal' come together, and then merge with HCPQ26 'physical and emotional condition difficult to evaluate' and HCPQ18 'affect negatively the confidentiality of data'. This is clearly a result of the answering pattern to the negatively formulated statements. **Cluster 3** merges later on with clusters 1 and 2.

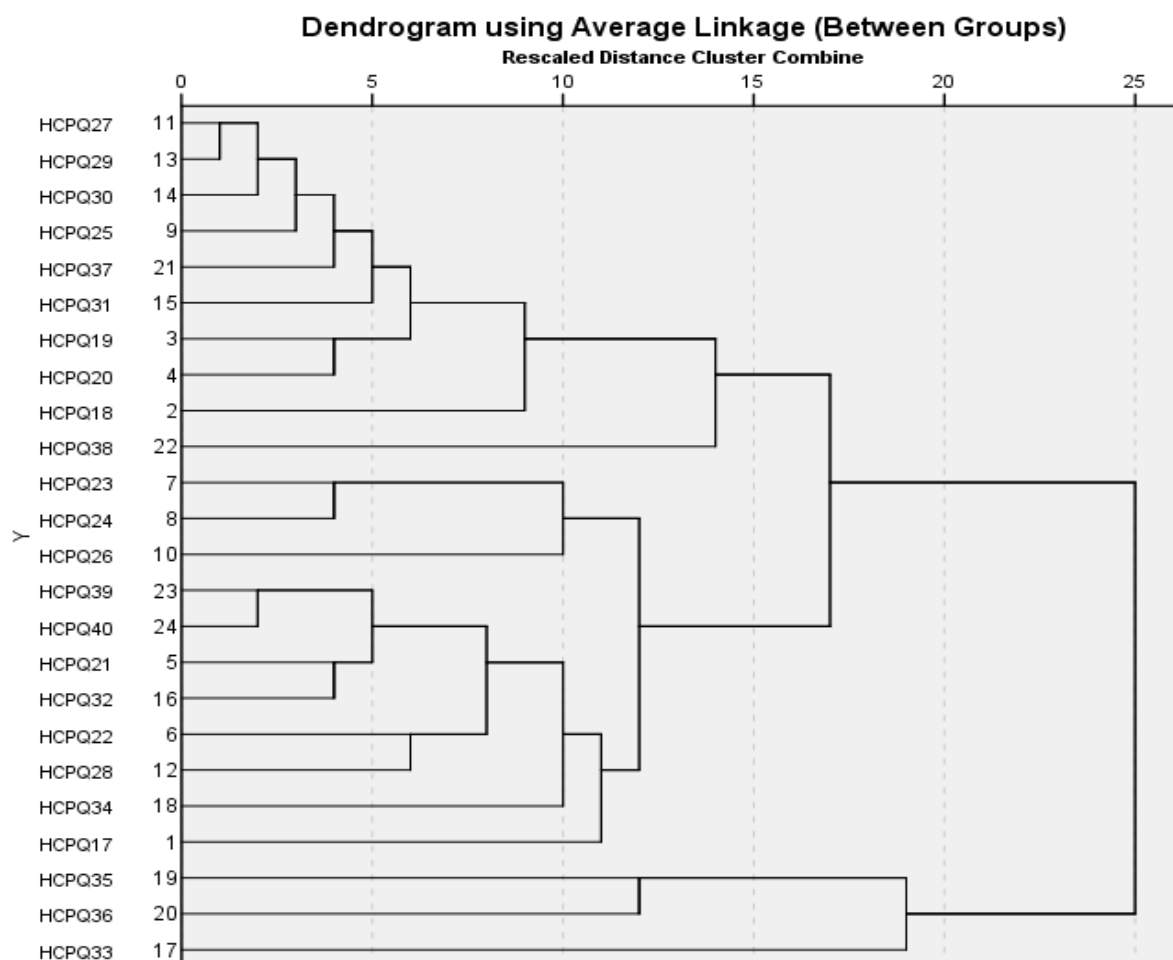
Cluster 4 is made up of the following three statements:

- HCPQ35: "My work place has sufficient technical facilities (broadband internet, computers, etc.) to provide telehealth"
- HCPQ36: "The management of my place of work promotes the use and implementation of telehealth services"
- HCPQ33: "I am adequately trained to use telehealth tools"

This cluster brings together HCPQ35 'workplace sufficient technical facilities', HCPQ36 'support management' and HCPQ33 'being trained to use telehealth tools' and stays rather independent until the end of the iterations which implies that these three components – namely, technical facilities of the workplace, encouragement of the management and trainings provided on telehealth – are three items of high importance for healthcare professionals.

Finally, due to the clustering of the negatively formulated statements under **Cluster 3**, we recoded these statements as if they were positively formulated. The following dendrogram displays the results of the cluster analysis performed after recoding:

Figure 13: Dendrogram – Questions from 17 to 40 (negative statements recoded)



Cluster 1 stays almost the same except for merging with HCPQ18 ‘telehealth effects the confidentiality of data negatively’ joining this cluster. This is an important signal meaning that HCPs think that telehealth is a valid complement to conventional services, it increases quality, it increases adherence, improves cooperation among HCP, increases contact with patients, especially in underserved areas and access for vulnerable patient groups. Consequently, HCPs are willing to use telehealth tools in the short to medium term. Nevertheless, this can only be achieved on the condition that telehealth does not replace face-to-face contact with patients and guarantee the confidentiality of the data.

Cluster 2 is exactly the same as before recoding, bringing together HCPQ39 ‘telehealth fulfils my professional needs’ and HCPQ40 ‘telehealth enables sufficient information for patient care’ in the first instance and then merges with HCPQ21 ‘telehealth is easy to use’, HCPQ32 ‘telehealth as addition to conventional healthcare improves patients’ health status’ and then HCPQ22 ‘telehealth is as safe as conventional healthcare’ and HCPQ28 ‘accurate diagnosis, treatment and care’. Two more items join the cluster that are quite independent due to a different answering pattern, namely HCPQ34 ‘telehealth reducing HCPs’ workload’ and HCPQ17 ‘patients are sufficiently competent to use telehealth’.

Cluster 2 merges with **Cluster 3** consisting of the negatively formulated items HCPQ23 ‘telehealth affects communication between patients and HCPs negatively’, HCPQ24 ‘telehealth consultations are impersonal’, HCPQ26 ‘physical and emotional conditions are difficult to evaluate using

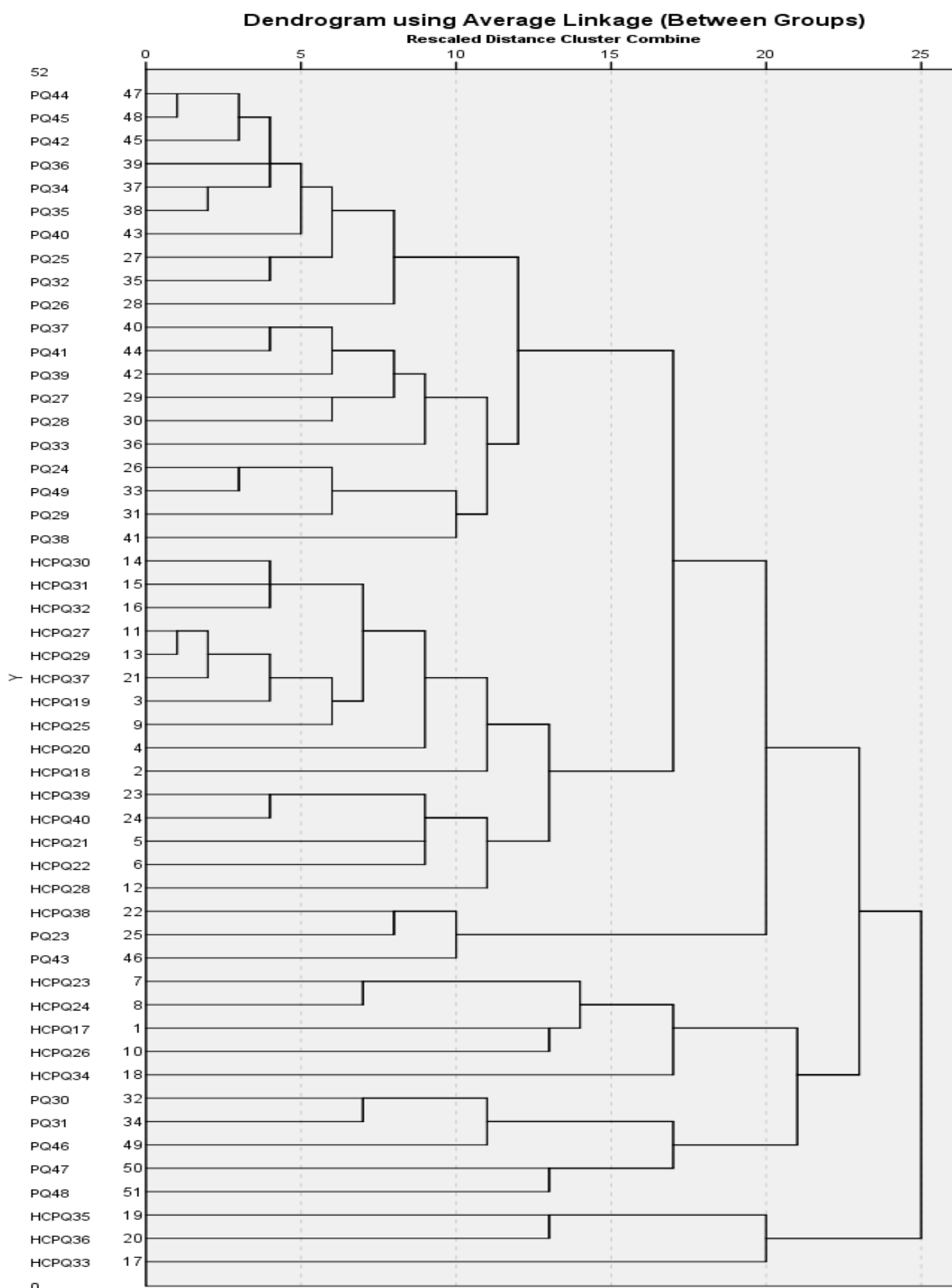
telehealth’.

Finally, **Cluster 4** stays the same and brings together HCPQ35 ‘workplace with sufficient technical facilities’, HCPQ36 ‘supportive management’ and HCPQ33 ‘being trained to use telehealth tools’. This cluster stays both the same after recoding and also rather independent which implies that the following three components are of utmost importance: technical facilities of the workplace, encouragement of the management and trainings provided on telehealth.

5.4 Patients’ and Health Professionals’ Views and Experiences

Finally, we explored if patients and health professionals follow the same patterns in responding the questionnaires (**Error! Reference source not found.**). Our first observation is that the views of patients and healthcare professionals are not mixed but clustered separately. We find quite homogeneous sets implying that patients and health professionals have different answering patterns. This needs to be noted since some statements were almost or exactly the same in both questionnaires. Thus, this analysis does not confirm our previous findings with regard to some statements where patients seem to agree with healthcare professionals as mentioned in the previous sections.

Figure 14: Dendrogram – Patients’ and Health Professionals’ Statements



Overall, we observe nine clusters that gradually merge:

Cluster 1 consists of ten patients’ statements (**Error! Reference source not found.**). Note that this cluster is the same Cluster 1 of the analysis of **Error! Reference source not found.** with minor

changes in the order of variables. As a result, our interpretation of this cluster does not change at all, and Cluster 1 becomes the cluster on the ‘benefits of telehealth’ from the patients’ perspective.

Table 162: Dendogram (both questionnaires) – Cluster 1

PQ44: “The addition of telehealth to conventional health services improves my quality of life”
PQ45: “Telehealth helps me improve my knowledge of my health condition”
PQ42: “I am willing to use telehealth services in the short to medium term”
PQ36: “Telehealth helps me stay more regularly in touch with health professionals”
PQ34: “Telehealth helps to increase the quality of health services”
PQ35: “The addition of telehealth to conventional health services improves my adherence to treatment and care”
PQ40: “Telehealth helps me save money I spend on healthcare (less travel, less inpatient visits, less hours off-work, etc.)”
PQ25: “Telehealth improves access to healthcare particularly for patients living in underserved areas”
PQ32: “Telehealth is a valid complement to conventional healthcare services”
PQ26: “Telehealth improves access to health services for disadvantaged patients”

Cluster 2 consists of six patients’ statements (**Error! Reference source not found.**). Note that this cluster is the same with the Cluster 2 of the analysis of **Error! Reference source not found.** with minor changes in the order of variables. As a result, our interpretation of this cluster does not change at all. Cluster 2 is the cluster on the ‘daily use of telehealth’ from the patients’ perspective.

Table 163: Dendogram (both questionnaires) – Cluster 2

PQ37: “My health status improves with the addition of telehealth to conventional health services”
PQ41: “Using telehealth my family/relatives are less concerned about my health status”
PQ39: “Telehealth fits into my daily life”
PQ27: “Telehealth services are easy to use”
PQ28: “Telehealth is as safe as conventional face-to-face health services”
PQ33: “Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services”

Cluster 3 consists of four patients’ statements (**Error! Reference source not found.**). These four variables were included in the Cluster 5 in the analysis of **Error! Reference source not found.**; however it is not the same cluster. It groups negative formulated statements (recoded), but loses items such as PQ30 ‘telehealth is impersonal’, PQ31 ‘difficult for HCPs to evaluate my physical and emotional conditions’ and PQ46 ‘concerned about the expertise of the professionals on telehealth’. Cluster 3 is about the negative impact of telehealth on privacy, confidentiality, communication and the additional responsibility it demands from patients. Thus, it refers to the shortcomings of telehealth in the context of daily use. Note that clusters 2 (‘daily use of telehealth’) and 3 (‘negative effects of telehealth’) merge quite quickly with each other first, and then with Cluster 1 (‘benefits of telehealth’).

Table 164: Dendogram (both questionnaires) – Cluster 3

PQ24: “Telehealth affects negatively the confidentiality of data”
PQ49: “Telehealth services affect my privacy negatively”
PQ29: “Telehealth affects negatively the communication between patients and health professionals”
PQ38: “Telehealth involves too much responsibility on my shoulders for managing my health condition”

Cluster 4 consists of ten professionals’ statements (**Error! Reference source not found.**). This cluster is very similar to the Cluster 1 of the analysis of **Error! Reference source not found.**, but also borrows two items – namely, HCPQ32 and HCPQ18 – from other clusters. Cluster 4 is the cluster regarding the ‘benefits of telehealth’ from the healthcare professionals’ perspective with the

exception that it affects confidentiality of patient data negatively.

Table 165: Dendogram (both questionnaires) – Cluster 4

HCPQ30: “The addition of telehealth to conventional health services improves patients’ adherence to treatment and care”
HCPQ31: “Telehealth helps me stay more regularly in touch with patients”
HCPQ32: “The health status of my patients improves with the addition of telehealth to conventional health services”
HCPQ27: “Telehealth is a valid complement to conventional health service”
HCPQ29: “Telehealth helps to increase the quality of health services”
HCPQ37: “I am willing to use telehealth tools in the short to medium term”
HCPQ19: “Telehealth improves access to healthcare particularly for patients living in underserved areas”
HCPQ25: “Telehealth improves cooperation among health professionals”
HCPQ20: “Telehealth improves access to health services for vulnerable patient groups (old, seriously sick, socioeconomically disadvantaged, etc.)”
HCPQ18: “Telehealth affect the confidentiality of data negatively”

Cluster 5 consists of five healthcare professionals’ statements (**Error! Reference source not found.**). This cluster resembles Cluster 2 in the analysis of **Error! Reference source not found.** and refers to the ‘daily use of telehealth’ from the professionals’ perspective. Note that, just like the first three clusters representing patients’ views merged, clusters 4 (‘benefits of telehealth’) and 5 (‘daily use of telehealth’) merge with each other very soon. Following this primary grouping of the statements within both datasets (clusters 1, 2 and 3 for patients; clusters 4 and 5 for professionals), we observe that these two groups of perspectives join each other in the second step. Thus, patients’ and healthcare professionals’ views and experiences on the benefits and daily use of telehealth are more interrelated than the rest of the indicators spread across both questionnaires.

Table 166: Dendogram (both questionnaires) – Cluster 5

HCPQ39: “Telehealth services fulfil my professional needs”
HCPQ40: “Telehealth enables me to receive and provide sufficient information for patient care”
HCPQ21: “Telehealth applications are easy to use”
HCPQ22: “Telehealth is as safe as conventional face-to-face health services”
HCPQ28: “Diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations”

Cluster 6 consists of one professionals’ and two patients’ statements (**Error! Reference source not found.**) and it is the only mixed cluster. In the context of this cluster, we observe that patients’ and healthcare professionals’ responses to the same questions are most alike in the requisiteness of telehealth not replacing conventional face-to-face contact. Cluster 6 articulates with the previous clusters right away.

Table 167: Dendogram (both questionnaires) – Cluster 6

HCPQ38: “Telehealth should not replace face-to-face contact with patients where it is possible and appropriate”
PQ23: “Generally speaking, I am willing to play a more active role in managing my health condition”
PQ43: “Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate”

Cluster 7 consists of five professionals’ statements borrowed from clusters 2 and 3 of the analysis of **Error! Reference source not found.** (**Error! Reference source not found.**). This cluster groups the perceived negative effects of telehealth from the professionals’ perspective regarding workload,

communication, impersonality, competency of patients, and ability to evaluate patients health. **Cluster 7** adds up with cluster 6 before joining all previous clusters.

Table 168: Dendogram (both questionnaires) – Cluster 7

HCPQ23: “Telehealth affects the communication between patients and health care professionals negatively”
HCPQ24: “Telehealth consultations with patients are impersonal”
HCPQ17: “Patients are sufficiently competent to use telehealth tools”
HCPQ26: “When using telehealth the physical and emotional conditions of the patient are difficult to evaluate”
HCPQ34: “Telehealth helps to reduce my workload”

Cluster 8 consists of five patients’ statements (**Error! Reference source not found.**). It includes items on the perceived negative effects of telehealth about impersonality, competency of professionals, privacy, and financial implications from the perspective of patients.

Table 169: Dendogram (both questionnaires) – Cluster 8

PQ30: “Telehealth consultations with health professionals are impersonal”
PQ31: “When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions”
PQ46: “I am concerned about the expertise of the professionals who monitor my health status through telehealth”
PQ47: “I am ready to pay more for my health services if telehealth leads to other benefits”
PQ48: “I can compromise on certain aspects of my privacy (e.g. having a camera in my apartment) if telehealth leads to other benefits”

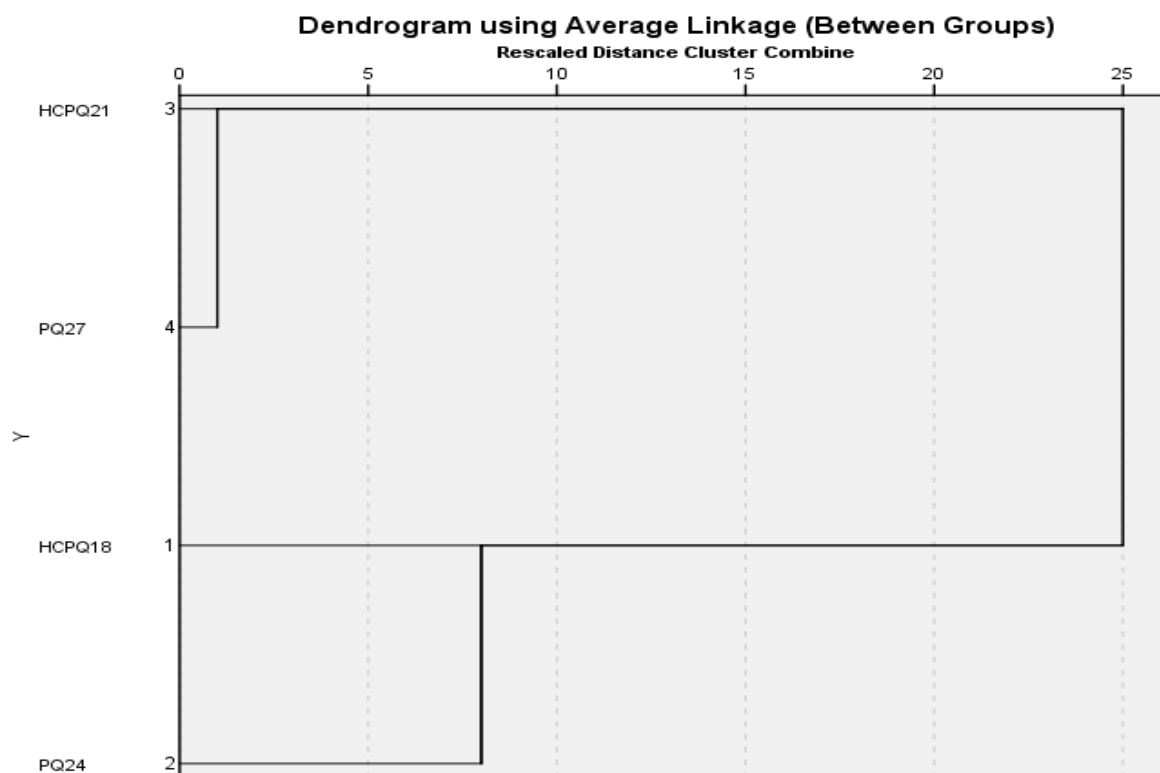
Cluster 9 is a critical cluster with a different answering pattern and consists of three professionals’ statements (**Error! Reference source not found.**). This cluster is exactly same with the Cluster 4 in the analysis of **Error! Reference source not found.**. Similar to the results of the cluster analysis for professionals, this cluster stays rather independent until the end of the iterations which implies that technical facilities of the workplace, encouragement of the management and trainings provided on telehealth are very important for healthcare professionals.

Table 170: Dendogram (both questionnaires) – Cluster 9

HCPQ35: “My work place has sufficient technical facilities (broadband internet, computers, etc.) to provide telehealth”
HCPQ36: “The management of my place of work promotes the use and implementation of telehealth services”
HCPQ33: “I am adequately trained to use telehealth tools”

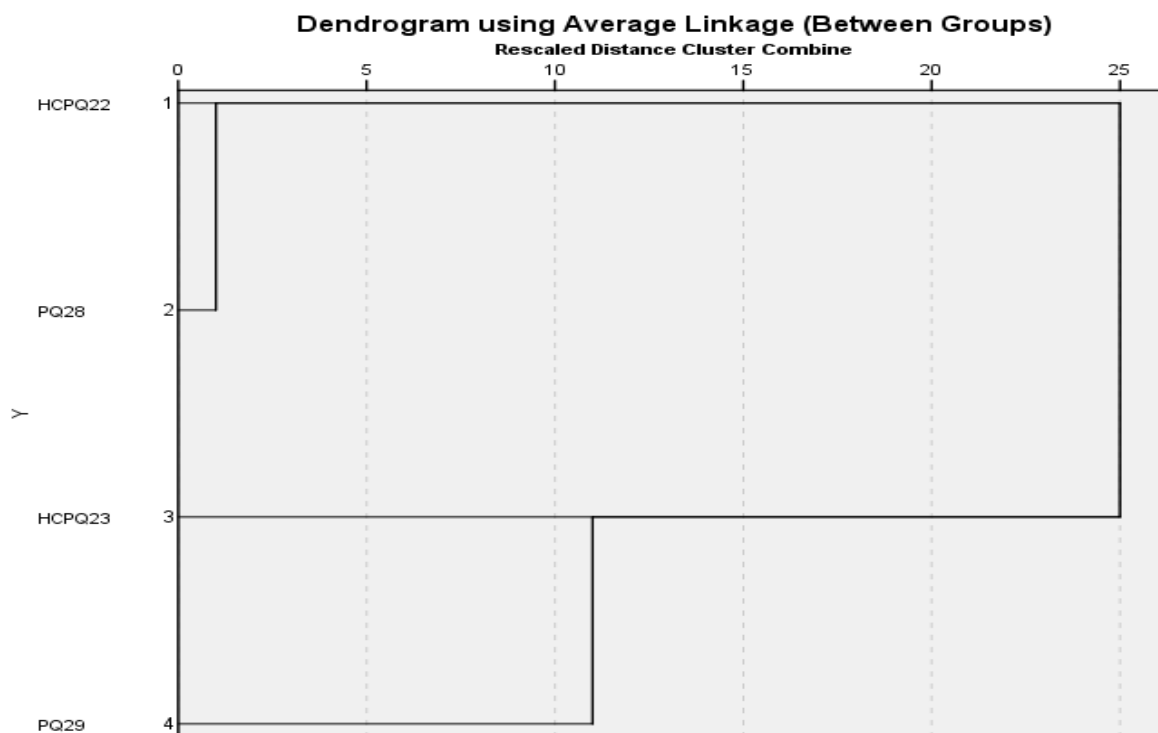
Finally, for the statements HCPQ18 and PQ24 (‘Telehealth affects the confidentiality of data negatively’) and HCPQ21 and PQ27 (‘Telehealth services are easy to use’) the convergence of the patients’ and healthcare professionals’ responses is also presented below (**Error! Reference source not found.**). Note that the two groups of respondents have more similar views regarding the ease of use of telehealth rather than the perceived negative effect of telehealth on confidentiality of patients’ data.

Figure 15: Dendrogram (both questionnaires) – confidentiality and ease of use



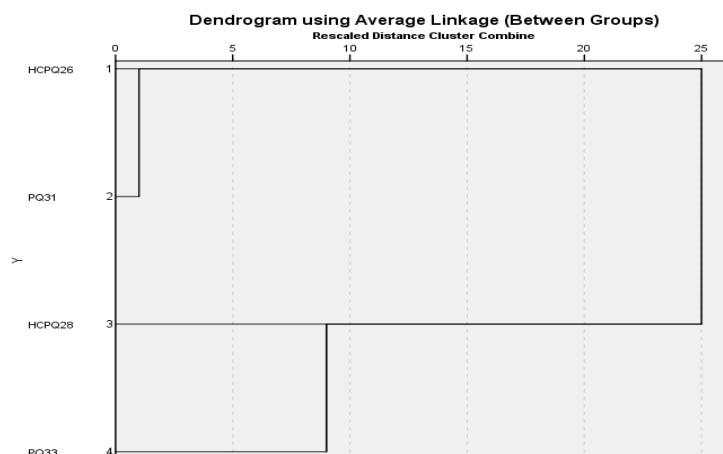
A similar exercise was made for HCPQ22 and PQ28 ('Telehealth is as safe as conventional face-to-face health services') and HCPQ23 and PQ29 ('Telehealth affects negatively the communication between patients and health professionals') (**Error! Reference source not found.**). The dendrogram makes it clear that patients' and professionals' perspectives on telehealth being as safe as conventional healthcare is much similar than their perspectives on negative effect of telehealth on patient-professional communication.

Figure 16: Dendrogram (both questionnaires) – safety and communication



As for HCPQ26 and PQ31 ('When using telehealth it is difficult for the health professional to evaluate my physical and emotional conditions') and HCPQ28 and PQ33 ('Using telehealth health professionals can draw conclusions as accurate as they would be able to through conventional healthcare services'), we see that patients and professionals have more similar views on the difficulty for healthcare professionals to evaluate patients' physical and emotional conditions (**Error! Reference source not found.**).

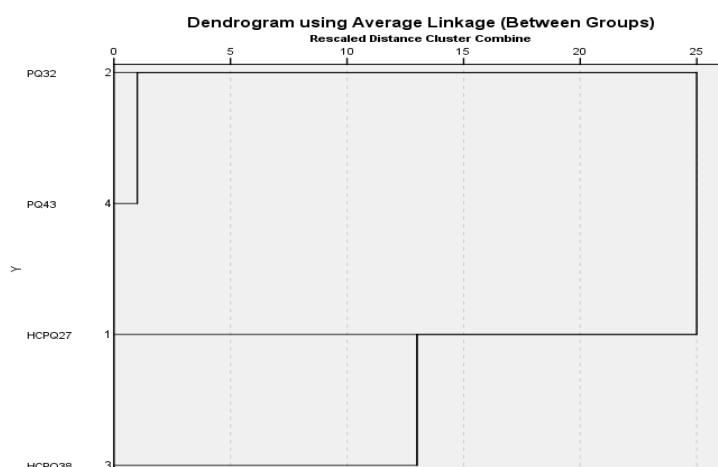
Figure 17: Dendrogram (both questionnaires) – evaluation by professionals and accuracy



Nevertheless, this is not the pattern for all the common questions asked to both groups. Let us take the example of HCPQ27 and PQ32 ('Telehealth is a valid complement to conventional healthcare services') and HCPQ38 and PQ43 ('Telehealth should not replace face-to-face contact with health professionals where it is possible and appropriate') (**Error! Reference source not found.**). We see that patients and professionals have very different perceptions as both groups only merge after 25 iterations. Moreover, although patients think quite similar on telehealth complementing and/or

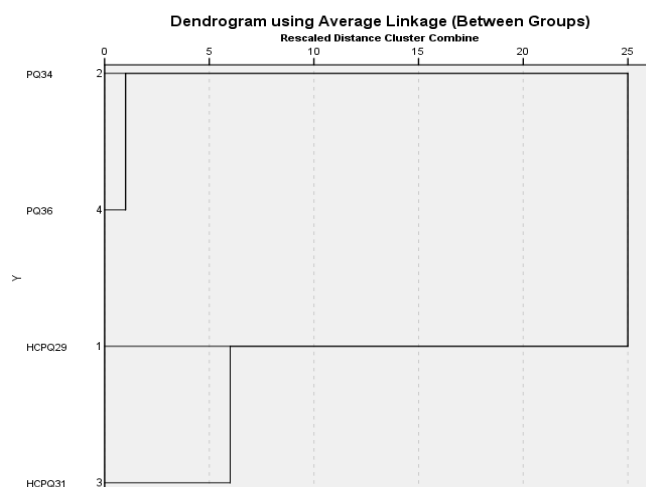
replacing conventional healthcare, professionals think rather more differently on these two items.

Figure 18: Dendrogram (both questionnaires) – complementing and replacing conventional healthcare



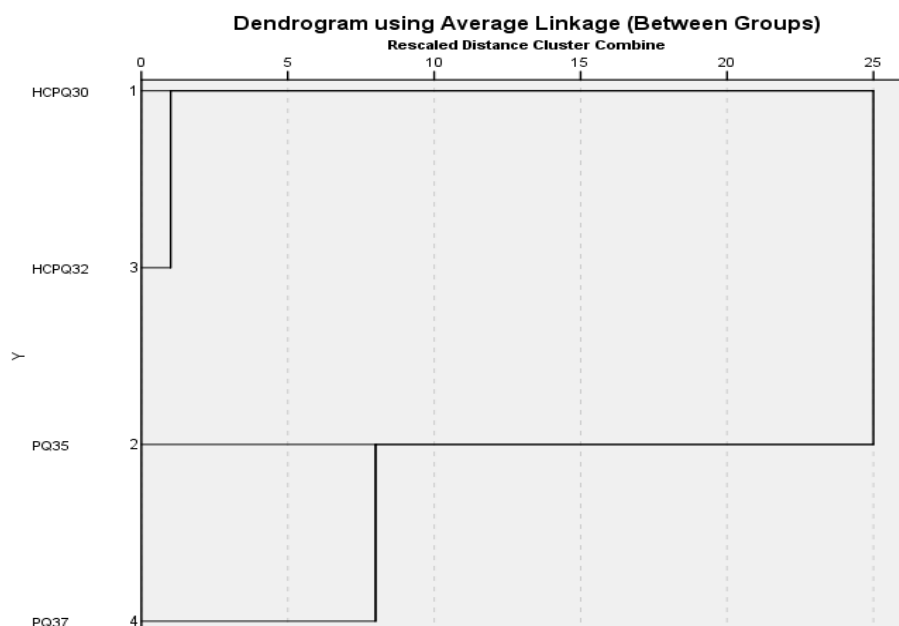
The same holds for some other comparisons, such as HCPQ29 and PQ34 (‘Telehealth helps to increase the quality of health services’) and HCPQ31 and PQ36 (‘Telehealth helps me stay more regularly in touch with health professionals’) where patients have relatively more similar views on both subjects in contrast to professionals (**Error! Reference source not found.**).

Figure 19: Dendrogram (both questionnaires) – quality of services and staying in touch



The same holds for HCPQ30 and PQ35 (‘the addition of telehealth to conventional health services improves my adherence to treatment and care’) and HCPQ32 and PQ37 (‘my health status improves with the addition of telehealth to conventional health services’) showing a different merging pattern (**Error! Reference source not found.**). In this case, professionals have relatively more similar views on both issues while patients’ views differ more.

Figure 20: Dendrogram (both questionnaires) – evaluation by professionals and accuracy



5.5 Summary of findings from cluster analysis

Cluster analysis is a very helpful methodology to visualise through dendrograms the views and experiences of respondents, as well as differences and similarities between responding patterns within and between both groups of patients and healthcare professionals, as well as interpret the visualised patterns. Based on the cluster analyses performed, we can summarise the results as follows:

Patients’ Views and Experiences

- The profile of patients forms the basis of the interpretation: most patients participating in the survey are not familiar with telehealth and lack information on the existence of telehealth in their environment.
- The statements ‘telehealth enables keeping in touch with HCPs regularly’, ‘telehealth is a valid complement to conventional healthcare services’ and ‘telehealth saves money’ are dominant in the cluster on ‘benefits of telehealth’ which means that these have the strongest benefits of telehealth according to patients.
- Patients’ views are diverse on the ‘daily use of telehealth’ while their views on the benefits in relation to telehealth are more similar.
- Patients can only manage their condition if face-to-face contacts between patients and health professionals are maintained in the process of care.
- Patients are ready to pay more if telehealth leads to other benefits and are also willing to compromise on certain aspects of their privacy to make things better.

Health Professionals’ Views and Experiences

- The provision of telehealth services is seen in close link with testing and training before using.

- Health professionals think that telehealth is a valid complement to conventional services, improves cooperation among HCP, increases quality, adherence, and contact with patients – especially in underserved areas and for vulnerable patient groups.
- The HCPs are willing to use telehealth tools in the short to medium term on the condition that telehealth does not replace face-to-face contact with patients.
- HCPs give a very strong signal that more focus should be on to the workplace, the management and continuous professional development.

Patients' and Health Professionals' Views and Experiences

- Views of the patients and the HCPs are not so similar as we understood from the frequency and cross tables explored.
- Regarding the statements identically formulated, patients and health professionals have converging and diverging answering patterns.

6. Discussion

6.1 Discussion of the Findings from the Patients' Perspective

6.1.1 Profile of the Respondents

- All 27 EU Member States are represented in the survey as well as Croatia, Iceland, Lichtenstein and Norway.
- More women responded to the survey than men.
- The age group 35-49 years is dominant with an average age of 41 years.
- Most respondents have a university level education and belong to the middle socio-economic class.
- More than 50% of patients live in a town or village having up to 50.000 inhabitants.
- Most health facilities are reachable within 30 minutes, which suggests that current planning could offer easier access to healthcare for respondents who live near health facilities.
- 55% of the respondents have a long term or chronic condition; 13% of patients feel that their health is generally bad and 41% fair.

6.1.2 Patients' Experience

- Only 17% of the respondents are familiar with telehealth services while 83% of the patients are not familiar with them.
- Patients are not picking up telehealth services because they are not available to them or they are not aware of their existence.
- The patient-users group consist of 6%, or 92 patients of the patient sample uses telehealth. We need therefore be very careful with conclusions and generalisations.
- Out of the 92 telehealth users, 15 patients were engaged in testing or setting up telehealth services.
- Very little training is offered to those using telehealth services (13% of the 92 telehealth users).
- 24% used telehealth for up to 1 month, while 21% used it for 1-2 years and 25% for more than 3 years.
- 70% rated telehealth services positively, 15% rated their experience neither positive nor negative, while 4 respondents feel it was a negative experience.
- Both media and health professionals play a central role in informing the public on telehealth services.
- Out of the 1508 non-user patients of telehealth services, 702 patients are of the opinion that there are no suitable telehealth services in their region, while 135 do not see any benefits of using telehealth services at all.

6.1.3 Patients' Statements

The findings can be grouped into seven themes with the following conclusions formulated for each theme.

Increased Responsibility

- 92% of the patients want to play a more active role in managing their own health condition and 48% of the user respondents indicated that they can handle the responsibilities presented by the use of telehealth in managing their condition.
- 62% of the patient respondents declared that they would use telehealth in the short and medium term, which represents 80% of telehealth users and 60% of non-users, with a significant Chi Square ($p=0,001$).

Confidentiality

- 53% of the users did not agree with the negatively formulated statement that 'telehealth affects the confidentiality of data negatively' and 32% of non-users disagreed as well. As such, patient users are less concerned about confidentiality of their data when using telehealth compared to non-users.

Privacy

- Only 12% of the users stated that telehealth services affect their privacy negatively, while 62% disagreed.
- 44% of the patient users and 30% of non-users are willing to compromise on certain aspects of their privacy ($p=0,05$) in favour of using telehealth while 33% of users and 32% of non-users would not be willing to compromise on their privacy when using telehealth.

Safety

- 54% of telehealth users think telehealth is as safe as face-to-face services while in contrast, only 29% of non-users perceive telehealth services as safe as traditional health services delivered face-to-face.

Overall Positive Benefits

- 75% of the patient respondents think that telehealth improves the access to healthcare for patients living in underserved areas.
- 67% of the responding patients think that telehealth improves access to health services for disadvantaged patients.
- 72% of the respondents think that telehealth is a valid complement to the conventional healthcare services.
- 77% of the patients think that telehealth should not replace the face-to-face contact with healthcare professionals, and it increases to 90% for the users group.
- 61% of the patients think that telehealth helps staying more in touch with their healthcare professional, which increases to 75% for the users group.
- 43% of the telehealth users indicated that their health status improves with the addition of telehealth to the conventional health services.
- 77% of the patients using telehealth indicated that the use of telehealth helps to increase the quality of health services. This high percentage of agreement in both groups shows

that the respondents are quite clear that quality becomes an important advantage of telehealth.

- 70% of the patients-users indicated that the addition of telehealth improves their adherence to treatment and care. Also 50% of the non-users agreed with this benefit.
- 68% of the users indicated that telehealth fits into their daily life, while 55% of non-users did not have an opinion and 36% agreed with the statement.
- 75% of the users think that telehealth saves money spend on healthcare supported for 53% by the non-users.
- 43% of the respondents that use telehealth and 33% of the non-users are not ready to pay more. Only 24% of non-users were ready to pay more, while 37% of users would agree to pay more for the health services if telehealth lead to other benefits.
- 41% of the patients and 26% of non-users think that their family and relatives would be less concerned if they used telehealth. Consequently, there is clear message that telehealth would help relatives and family of the patient to feel less concerned about his/her health status.
- 73% of the respondents agreed with the statement that telehealth improves the knowledge of his/her health condition, with 55% of non-users also agreeing with the statement.

Easy to Use

- 72% of the users find telehealth services easy to use compared to 37% of the non-users.
- 61% of patients who received training in telehealth think that telehealth is easy to use while those who did not receive any training find it more difficult.

Communication

- 47% of the users disagree that telehealth affects the communication between the patient and healthcare professional negatively while 38% of non-users indicate a negative effect.
- 37% of users think that the telehealth consultations are impersonal although also 36% disagree with the statement 'telehealth consultations are impersonal'. Nevertheless, it should be noted that 36% of the patient users indicated that telehealth consultations with healthcare professional are impersonal.
- The difficulty to evaluate the physical and emotional conditions of patients when using telehealth services was recognised by 56% of the users and 54% of the non-user respondents.
- 35% of the users indicated that health professionals can draw conclusions as accurate as they would be able to do through conventional services, while the non-users are more sceptical as only 24% of the non-users respondents agree with this statement.
- 33% of the patients using telehealth are not concerned about the experience of the healthcare professional monitoring their health status through telehealth while 30% of non-users are concerned;

6.1.4 Clusters of Statements

- The benefits cluster is dominant among which the statements ‘more regularly in touch with HCPs’, ‘valid complement to conventional healthcare services’ and ‘saves money’ are each quite strongly spelled out benefits.
- Patients’ views are converging on ‘the daily use of telehealth’ and the patients’ views on the daily life operations and the benefits for the patients are very close together, which shows that ‘investing in telehealth is wealth’.
- Patients can only manage their condition if face-to-face contacts between patients and health professionals stay key in the process.
- Patients are ready to pay more if telehealth leads to other benefits and are willing to compromise on certain aspects of their privacy to improve their health through telehealth.

6.2 Discussion of the Findings from the Healthcare Professionals’ Perspective

6.2.1 Profile of the Respondents

- All 27 EU Member States are represented in the survey as well as Croatia, Iceland, Lichtenstein and Norway.
- More female nurses and pharmacists responded to the survey, while the response rate of female and male physicians is more balanced and close to an even distribution.
- The 35-49 years age group is dominant with an average age of 40.5 years.
- We have observed a ‘gap’ of responding health professionals in the age group 35-45 years which confirms, even within this database, the challenges of the future health workforce and the ageing workforce.
- 20% of health professionals’ respondents are working in cities above 500.000 inhabitants. This means that receivers and the providers operate in different communities.
- The largest group of health professionals that responded to survey were nurses (67%), followed by physicians 13% and pharmacists 7%.

6.2.2 Healthcare Professionals’ Experience

- 34% of the health professionals in the sample are familiar with providing telehealth services.
- 36% of the responding health professionals have telehealth services available in their working environment.
- 20% of the respondents provided health services with the support of telehealth.
- The health services most often provided by health professionals are analysing clinical data (50%), ‘health promotion and education’ (35%) and monitoring vital signs (27%).
- In contrast to the findings of patients’ responses, 43% of health professionals that have used or use telehealth services were involved in testing and setting up these services.

- 44% of the user health professionals followed training on telehealth in the past three years. It is therefore recommended that in order for health professionals to pick up telehealth services, a better framework for continuing professional development (CPD) should be developed, engaging health professionals and patients.
- 5% of health professionals that are non-users are engaged in training on telehealth.
- 48,5% of the health professionals were providing telehealth services for three years or more;
- Health professionals rate their experience with telehealth positive in 82%.
- Out of the 924 health professional users, 73% are still providing these services.
- 2.982 respondents that never used telehealth in the provision of health services, indicate that the main reasons for not providing telehealth services is (1) that there are no telehealth services available (80%), (2) there is insufficient reimbursement (8%), (3) the benefits are not clear (4,5%), and 15% provided other reasons. There is the willingness within the group of the non-users health professionals to use telehealth, but facilities and promotion of telehealth from the management of their workplaces are lacking.

6.2.3 Healthcare Professionals' Statements

The findings can be grouped into five themes with the following conclusions formulated for each theme.

Competence

- Only 29% of healthcare professionals responding think that patients are sufficiently competent to use telehealth tools. Nevertheless, 39% of user respondents think that their patients are competent to use telehealth tools, while only 17% of non-users agree with the statement. 38% of user and 52% of non-user healthcare professional respondents disagree that patients are sufficiently competent to use telehealth tools. Males more often think that patients are competent to use telehealth tools.
- 56% of healthcare professionals who are using telehealth find it easy to use, compared to only 30% of non-users who find it easy to use.
- 62% of those who received training in the past three years indicated that applications are not difficult to use compared to 36% of those who did not have any training.
- 45% feel they have been adequately trained to use telehealth tools, however 38% of users feel they do not have sufficient training.
- Healthcare professionals that do not use telehealth are of the same opinion as patients who think that healthcare professionals are not sufficiently trained.
- Healthcare professionals perceive a clear lack of continuous professional development in telehealth.

Confidentiality & Privacy & Safety

- 15% users and 17% non-users of the healthcare professional respondents indicate that telehealth affects negatively the confidentiality of data.
- A clear message comes from 66% of users and 52% of the non-users disagreeing with the negative statement 'Telehealth affects negatively the confidentiality of data'.

- 46% of the users think telehealth as safe as conventional face-to-face healthcare services. 30% of non-users indicate telehealth would be as safe as traditional healthcare services. In contrast, 29% of users find it less safe as face-to-face services.
- 54% of users and 59% of non-users indicate when using telehealth it is difficult to evaluate the physical and emotional condition of the patients. This result is similar to the findings from patients' data.
- 79% of the healthcare professionals think that telehealth is a valid complement to conventional health services.
- 43% of users and 31% of non-users of healthcare professionals think that diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations. Instead, 32% of users and 37% non-users do not agree with this statement.

Benefits

- 81% of healthcare professionals (87% users) think that telehealth improves access to healthcare for patients living in underserved areas.
- 65% of respondents think telehealth improves access to health services for vulnerable patients groups.
- 64% of the healthcare professionals (78% of users) think that telehealth improves cooperation among healthcare professionals.
- 70% of the healthcare professionals (85% of users and 64% of non-users) think that telehealth increases the quality of the health services.
- 60% of the professionals think that telehealth improves adherence.
- 68% of healthcare professionals using telehealth think that telehealth helps them to stay regularly in contact with patients and 55% of non-users have the same opinion.
- Technology is still not in the position to reduce the workload of the healthcare professionals. 30% of healthcare professionals using telehealth see a reduction in their workload and 40% of the users disagree with the statement 'telehealth helps to reduce workload', which implies that the addition of telehealth services increases the health professionals' workload. Only 10% of non-users indicate that telehealth would help them to reduce their workload.

Communication

- The majority of healthcare professionals using telehealth (52%) indicate that telehealth does not have a negative impact on the communication with patients, while only 38% of non-users thought the same.
- 40% of the healthcare professionals not using telehealth think that telehealth services are impersonal, while a lower percentage, namely 34% of users thought the same. 39% of the users disagree with the statement that 'Telehealth consultations are impersonal', compared to 27% of non-users.
- The great majority of healthcare professionals think that telehealth should not replace face-to-face contact with patients. It is clear that most healthcare professionals (88%) think that telehealth should not be an alternative to face-to-face contact with patients.

Workplace

- 43% indicate that their workplace has sufficient technical facilities to provide telehealth while 38% think this is not the case.
- 21% of healthcare professionals indicate that the management of their work place promotes the use and implementation of telehealth. 43% think this is not the case.
- It is important to have the management of the health services informed and engaged in developing and implementing telehealth.
- 72% of the healthcare professionals indicate they are willing to use telehealth in a short and medium term.
- When it comes to satisfaction of professional needs, only 18% of the Healthcare Professionals not using telehealth think that telehealth services would fulfil their professional needs. In contrast, 45% of those who use telehealth indicate that telehealth services fulfil their professional needs.
- The majority of healthcare professional users indicate that telehealth enables them to receive and provide sufficient information for patient care, while 17% disagree with the statement 'telehealth enables me to receive and provide sufficient information for patient care'.

6.2.4 Clusters of Statements

- Health professional think that telehealth is a valid complement to conventional services, it improves cooperation among HCPs, increases quality, adherence, increases contact with patients, especially in underserved areas and for vulnerable patient groups.
- The HCPs are willing to use telehealth tools in the short to medium term on the condition that telehealth should not replace face-to-face contact with patients.
- Professionals think that the workplace, workplace management and continuous professional development should be more in focus.
- Views of the patients and the professionals are not similar.
- On identically formulated statements, patients and health professionals have converging and diverging answering patterns.

6.3 Findings in Relation to the Literature Review

6.3.1 Findings in relation to Patients

When analysing the results regarding patient **demographic data**, the highest percentage of patients living alone within the age group was over 65 years old. Besides, no significant differences were found when analysing users' and non-users' **willingness to use telehealth** in relation to the distance to a healthcare facility, the primary care centre and hospital. Interestingly, these findings partially reverse the literature review results which pointed to the fact that patients considered benefits in using telehealth from reduced travel, or reduced travel expenses for hospital stays. Nevertheless, it was noted that the majority of the respondents were patients who have these healthcare facilities within a very close reach and consequently, views of patients coming from underserved areas are not captured in the findings. As such, findings reveal that according to patients telehealth can be beneficial regardless of the distance from the healthcare facility.

If we consider the variable “having/not having a long-term or chronic condition, we can conclude that having a chronic condition does not seem to be a major factor behind individuals’ willingness to adopt telehealth, nor does it seem to play a role in shaping people views on telehealth. An assumption made out of the findings of the literature review was that **patients with chronic conditions** should be in principle more prone to using telehealth as this group of people is the one that should benefit the most from using telehealth services. However, no significant differences were observed regarding the willingness of patients from these two groups to use telehealth in the future, which is not in line with some of the assumptions made in the literature review.

Our survey revealed that a small percentage of patients are actually aware of the **existence/availability of telehealth services**. This could be due to various factors such as the limited deployment of telehealth in many parts of Europe, and the lack of appropriate dissemination strategies around telehealth services available. Therefore, some efforts in awareness of services but also in implementation still remain to be solved. In this sense, health professionals play a central role in informing the public about telehealth services in disseminating the availability and benefits of telehealth services as well as reinforcing the use of telehealth.

Results of the literature review stated that **difficulties in using telehealth services** were also reasons for not adopting new ways of healthcare delivery. Related to these, we observed that the patients sample found telehealth services easy to use. There was also a clear relationship between finding telehealth easy to use and having received any training on telehealth. Moreover, there is a link between the patient involvement, the education and training provided, and the use of telehealth services. Patients who do not consider telehealth as easy to use are among the ones who did not receive any training, which highlights again the need to put more effort into training for patients and health professionals in using telehealth.

Fully in line with the conclusions of the literature review, a majority of patient users rated their **experiences using telehealth services** positively. According to the results of the online survey, there is no influence in rating a positive experience and the time of telehealth services used, slightly contrary to some articles in the literature review that suggested that once patients are more used to telehealth, their perspectives changed positively.

Patients are generally **willing to play a more active role in managing their own condition** in contrast to a small percentage of patients thinking that this would entail too much responsibility for them, which is fully in line with what the literature review showed. A slightly larger number of patient users are less positive for the potential increased responsibility. Despite telehealth can be a tool for promoting their active participation and empowering patients to perform better self-care, a smoother adaptation process and continuous follow-up should be done during the process of telehealth uptake. However, patient users and non-users are generally willing to use telehealth services, which is indicative of a very positive perception among this group.

The topic of **confidentiality** does not seem to be as relevant as the literature review suggested from the patients’ perspective. More patients’ users positioned themselves towards the statement of confidentiality disagreeing on the negative implications of telehealth services for the confidentiality of personal data. Based on the results, we can conclude that users are less concerned about confidentiality of their data when using telehealth compared to non-users. This is an important finding to be considered in the national workshops and the European focus groups, which is line with the preliminary findings from the literature review suggesting that when the patients are participating in telehealth pilots, problems with confidentiality were not highlighted as the major ones, and also with other results that showed up that once the patients started using the services, their concerns over potential threats to data confidentiality tended to decrease.

Likewise, **privacy** seems not to represent a major barrier to telehealth adoption among patients as it

is suggested in the literature review. Moreover, patients indicated they would be ready to accept to compromise on certain aspects of their privacy in favour of using telehealth provided that telehealth brings about other benefits.

Regarding the aspect of **safety**, the tendency goes in line with the results of confidentiality and privacy. Patient users think that telehealth is as safe as face-to-face services, which is another positive result against what was described by the literature review where only few studies showed that actually telehealth can improve patient safety. Although there are some agreements with the negative statements on privacy and safety, most patient respondents are not especially concerned about these issues. Moreover, patients are willing to pay more and even compromise on certain aspects of their privacy if it helps to their self-management of their conditions.

Regarding the **benefits of telehealth**, patients think that telehealth is a valid complement to more traditional ways of using healthcare services as long as it does not fully replace face to face contact with healthcare professionals. This matches previous conclusions and is reinforced by the cluster analysis findings showing that patients would only adopt telehealth if face to face contacts between patients and health professionals stay key in the process of care. Contrary to what was described in the literature review, patients (more users than non-users) think that these services help them to stay more in touch with healthcare professionals, which is a conclusion that shows us that there are more **prejudices in using telehealth** than actual problems and difficulties in this regard. Patients think that telehealth can support the delivery of care as it has many benefits linked to their daily lives. Patient users find telehealth services helpful to increase the **quality of health services** as it was suggested by the literature review, and more than half of the non-users agree with this. This high percentage of agreement in both groups shows that the respondents are quite clear that quality becomes an important advantage of telehealth. They also highlighted that patients' **awareness regarding their health condition** increases. Patient users acknowledge that using telehealth services improve their **adherence** to treatments and care, which confirms what the literature review suggests.

As far as the suitability of telehealth services into the **daily life of patients is concerned**, the majority of users think that telehealth fits into their daily life. When it comes to patients' expenses for healthcare, a clear majority of patients using telehealth think that **telehealth carries the potential for saving money** they regularly spend on healthcare, and among non-users, half of them also agree with this statement on savings, which clearly supports the literature review findings. In reference to the literature review, the **benefit of telehealth services for the family and informal carer** have been confirmed with the results of the survey as a large number of patients state that telehealth would help relatives and families to feel less concerned of their health status.

The majority of patient users think that telehealth does not undermine the relationship and **communication with health professionals**, which goes in line with previous statements on benefits of telehealth services and are more positive results than the ones described by the literature. However, it is notable that half of the patient users recognise that it is **difficult for health professionals to evaluate the physical and emotional conditions of patients** when using telehealth services in line with some concerns highlighted previously. Although there is an agreement on the **competency of professionals** who monitor patients via telehealth tools, half of the users are not convinced that health professionals can draw the same conclusions as they would though using conventional services.

6.3.2 Findings in relation to Health Professionals

Concerning health professionals' demographic data, it was remarkable that the vast majority of respondents were women. This parameter was never analysed according to previous findings in the

literature review and a gender factor could be further explored in future analysis of telehealth services development. Among the professionals' respondents and analysing their experience with telehealth, the majority of them are also non-users, but a bigger proportion is aware of services available and they define themselves as being familiar with them. This states that the awareness of the services does not necessary require previous use.

Among professional users, the services provided most often are in line with the services generally described as available in the literature review: analysing data, monitoring vital signs and health promotion and education. Particularly interesting is the latter mentioned, where health systems can build on affordable solutions regarding the health promotion through the use of telehealth services. Overall, health professionals think that **telehealth is a valid complement to conventional services**, it increases **quality of care, patients' adherence**, improves **cooperation among health professionals**, increases **contact with patients**, especially in **underserved areas** and access for **vulnerable patient groups**.

A larger proportion of health professional respondents – even ones who were not using telehealth – were involved in **testing and setting up telehealth services** compared to patients who were involved in testing and setting up. However this refers to less than a half of the professional users. The involvement of different health professionals in setting up and testing telehealth services have been identified in the literature review as a precondition for health professionals to be more confident in using the services but also in having services meeting their professional needs. The survey results show a very similar distribution on the involvement in testing among various professionals, but physicians are the group of healthcare professionals involved most in testing or setting up telehealth services. This is important to note, as another group to be most exposed to telehealth services in their working environment are nurses. Thus, the number of nurses involved in the testing and setting up of telehealth services should be proportionate and they should have the same opportunities to be trained and to be part of the testing and implementation processes. This puts the Continuous Professional Development (CPD) in telehealth into question. It is therefore recommended that in order for health professionals to pick up telehealth services, a better framework for CPD should be developed, engaging all health professionals and patients. There is still work to be done in this regard as one of the major barriers for adoption of telehealth services described by health professionals in the literature review were the **perceived lack of necessary knowledge and skills**.

Analysing the group of non-users in depth, we see that there is **willingness to use telehealth services** in the future. Overall, health professionals rate their **experiences with telehealth** very positively as showed in the literature review. Moreover, health professionals seem to be very positive, yet there are some aspects that need to be improved. Furthermore, there are no differences in rating positive experiences in relation to different professions or genders. There is a very promising finding regarding the use of telehealth services, as almost the half of the healthcare professionals were providing telehealth services for three years and more, meaning that once they start using them, their use continues and could lead to moving telehealth to into mainstream practice. Looking at those who have stopped using telehealth, we see that when they provided a reason for termination of their use, it was always due to the lack of these services in their places of work. This suggests that either they changed their workplace, or the services were not continued after an initial piloting phase. Among the health professionals who are non-users of telehealth it is interesting to remark that lacking availability of telehealth services is the main reason for not using telehealth services, compared to the percentage of the other reasons given. This is also linked to what have been found for patients: Among the problems identified as major barriers for the uptake of the telehealth services is the lack of full implementation. We can draw from this knowledge, also in comparison with other findings on the support of the management, that there is a willingness

within the group of the non-users health professionals to use telehealth, but facilities and the promotion of telehealth from the side of the management of the workplace are lacking.

Conclusions from the literature review suggested that health professionals, particularly doctors and nurses, seemed to be concerned about **patients' ability to use telehealth services**, and this was defined as a barrier to using telehealth, especially when the service at stake entails a certain transferring of responsibilities to the patient for the management of the condition. The survey suggested a different pattern as the agreement with this depends on whether the professionals have used telehealth or not. Much greater percentage of health professionals who have provided telehealth services are confident their patients are adequately equipped to use telehealth services patients. There was a weak association between gender and the opinion of health professionals about the patients' competency: Males more often think that patients are competent to use telehealth tools.

When looking at the relationship between whether healthcare professionals followed any training on telehealth and whether telehealth was easy to use, those who received training in the past three years indicated that those applications are not difficult to use. The data indicated a clear relationship between healthcare professionals finding telehealth easy to use and whether they received any training in the past. This is also linked with the same conclusions of the literature review that suggested that the self-confidence also increased over time.

When it comes to CPD from the health professional users' perspective, a small group was convinced that they had enough **education and training in using telehealth services**. However, among the non-users, a big proportion felt they did not have sufficient training which confirms the literature review findings. In the same line with the patients conclusions, more education and training on telehealth need to be offered for health professionals at all levels of education (graduate and CPD), as health professionals perceive a clear lack of CPD on telehealth. Furthermore, significant association was observed between gender of healthcare professionals and whether they feel adequately trained to use telehealth tools. Male users and non-users more often feel adequately trained, which also highlight the need to take a gender perspective when offering opportunities for CPD. As concluded by the cluster analysis, health professionals think that it is important to focus on the professional needs of the health professionals which link very strongly with patient information and improving patients' health status by the use of user-friendly technologies.

In relation to **confidentiality** of data, a relatively low percentage indicates that telehealth affects the confidentiality of data negatively. Furthermore, a clear message comes from a big proportion of users and non-users disagreeing with the negative statement 'telehealth affects negatively the confidentiality of data'. Despite the literature review suggested more concerned related to the confidentiality from the patients' side, it suggested also important concerns from health professionals that are not shared by the results of the survey.

As the literature review suggested, there are still some concerns among the professionals that telehealth are well enough prepared to let them provide the same healthcare, as there are still concerns and difficulties for health professionals when **evaluating the physical and emotional conditions of the patients**. Nevertheless, no negative findings were either linked to this aspect. General practitioners most often thought that it was difficult to evaluate patients' condition using telehealth. This is in line with the literature review findings indicating that the telehealth services are not meeting the needs of healthcare professionals.

Similar to the responses from the patients, healthcare professionals think that telehealth is a **valid complement to conventional health services** in line with the literature review. So, despite the improvements that need to be made, health professionals are taking up these new opportunities that technology is offering them.

Similar to the patients' responses and literature findings, healthcare professionals think that telehealth improves **access to healthcare** for patients living in underserved areas and that also improves access to health services for vulnerable patients groups.

As previous literature findings, health professionals think that telehealth improves **cooperation among healthcare professionals** which is extremely important for its significance. When asked about relationship between telehealth and **patient adherence**, similar to the patients' view, professionals think that telehealth improves adherence.

Regarding health professionals' **communication with patients**, more positive perceptions from the healthcare professionals were obtained by the survey in comparison to those from the literature review. We have observed a great difference between users and non-users when asked whether the addition of telehealth would improve patients' health status. More positive answers were achieved regarding the issue, but a great majority of non-users had no clear view on this, which questions some findings of the literature review. A gender component could be also present as more male health professionals agree that **health status of patients** improves with the addition of telehealth.

As some literature review findings were suggesting, a greater percentage of users of healthcare professionals think that **diagnosis, treatment and care are as accurate with telehealth as with face-to-face consultations**. Nevertheless, some difficulties still remain from the health professionals' side which is also linked with previous findings.

When it comes to the **satisfaction of professional needs**, a small percentage of healthcare professionals not using telehealth indicated that telehealth services would fulfil their professional needs, and less than half of the professional users considered the services fulfilling their professional needs.

Furthermore, it is interesting to observe that a small proportion of healthcare professionals using telehealth see a reduction in their workload and almost half of the users disagree with the statement 'telehealth helps to reduce workload'. This implies that the addition of telehealth services increases the **health professionals' workload**, in line with previous findings and against other positive outcomes described regarding the administrative burdens, productivity, referrals and travels. Looking at the results of the survey, we can conclude that technology is still not in a position to reduce the workload of the healthcare professionals, and also should include a gender aspect in designing the tools and systems, as again, a gender component has found in relation to this: More male health professionals indicated that telehealth reduces their workload and that telehealth services fulfil their professional needs.

Completely linked to patients' views and literature review findings, a great majority of healthcare professionals think that **telehealth should not replace face-to-face contact with patients**, and equally important is the ability of the technology in making sure the communication with patients and their physical and emotional evaluation does not get impersonal by using telehealth.

With regard to the promotion of use and implementation of telehealth, **awareness of telehealth benefits** should be promoted not only among patients but equally among managers, Chief Medical Officers, Chief Nursing Officers, hospital directors and politicians. Health professionals give a very strong signal that more focus needs to be put on the workplace, the management and the continuous professional development. Consequently, it is important to get the management of the health services informed and engaged in developing and implementing telehealth. There is a strong relationship between the promotion of telehealth adoption and strong will to take up telehealth in the near future. In order to motivate health professionals to use telehealth tools, the management of the workplace has to actively promote these services. It is therefore opportune to link this finding with the literature review (2nd pillar: Communication approaches) where "Promotion strategies" and

“Health Care Managers perspectives” became keywords when searching for the literature which could give us insight in whether the management has promotion strategies and how they promote strategies.

Also in line with patients’ views and literature findings, healthcare professionals that responded to the survey indicate they are **willing to use telehealth in a short and medium term**. This is a very positive signal.

To conclude with, when analysing patients and health professionals views together and taking into account previous knowledge gathered through the literature review, it was assumed that patients’ and professionals’ views and perspectives were very similar, but from the cluster analysis, we see that further attention needs to be paid to exploring to what extent are the view of health professionals and patients different from one another. Nevertheless, these findings corroborate that each group needs to be consulted and taken into account as their views and needs are different and would influence the uptake and implementation of telehealth services.