



## **Therapeutic adherence in the digital age: a validation process of an assessment**

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### **Abstract**

**Problem.** Analyzing the statistical data, poor adherence to therapy leads to an increase in healthcare costs, co-morbidities and a progressive worsening of the patient's general condition.

Despite this, this phenomenon is often underestimated, particularly with regard to elderly patients. In addition, the increase in the use of technology in our daily life would also represent a useful tool for managing one's health, but to date it is still little used. **Objective.** To validate a tool for assessing the level of adherence to therapy and the use of digital systems in order to improve adherence itself.

**Materials and Methods.** Engagement of a total of 70 elderly Italian patients, with co-morbidities and being treated with one or more drugs. The data were analyzed using descriptive statistics through the use of the Microsoft Excel program. **Results.** The level of adherence to therapy is high, especially among the elderly and in women. Furthermore, the increase in adherence to therapy and the use of digital devices is directly proportional to the increase in the patient's level of education.

**Conclusions.** Adherence to therapy is quite high, but further studies and research should be carried out on more numerous samples and patients from different countries.

Still too few patients adhere to educational programs on the use of digital, excluding themselves from a world where digital is the order of the day. The elderly, and especially the elderly patient, should be trained, informed and supported by adopting management techniques for their pathologies that can also go hand in hand with digital evolution.

**Keywords:** Elderly people; patients; therapeutic adherence; digital skills.

### **Introduction**

Non adherence to treatments is one of the most common problem in patients suffering from a chronic disease. Despite this, this phenomenon is often underestimated and to prove it are precisely the data of the WHO (World Health Organization [WHO], 2003), according to which about half of the population doesn't respect the continuity of their therapies, mainly causing an increase in healthcare costs, comorbidities and worsening of the patient's general condition. Adherence to treatments is not determined only by the patient's predisposition to follow medical prescriptions, but it is a multidimensional phenomenon characterized by the influence of the socio-economic dimension, the complexity of the therapeutic regimen and personal factors such as culture, expectations and wishes of each patient. From the nursing point of view it is therefore important to understand what the patient's beliefs are about his pathology in order to improve his adaptation to the chronic condition.

We know that in Italy multimorbidity affects one third of the adult population.

A systematic review of the literature (Marengoni et al., 2011) in which scientific studies conducted from 1990 to 2010 on the frequency, causes and consequences of multimorbidity in elderly people were



taken into consideration revealed that worldwide prevalence varies widely depending on the case series considered, ranging from 20-30% in studies on the entire population to 55-98% in the age group over 65. With age, in fact, the probability of the coexistence of multiple pathologies increases, often without the possibility of identifying the most relevant from a prognostic and therapeutic point of view.

The increasing prevalence of multimorbidity has led to new health needs, with the definition of the so-called complex patient, identified as "a person with two or more chronic conditions, in which each of these medical conditions can influence the outcome of other concomitant pathologies" (Tragni et al., nd). So we can say that the elderly with multimorbidity represent a heterogeneous category in terms of disease severity, functional status, prognosis and risk of adverse reactions.

We are thus faced with a complex management of their pathologies by the elderly patient, but at the same time we know that technology has had and still is having a huge boost in various sectors. So why not analyze the benefits of using digital therapies in health management? If we think about cognitive-behavioural therapy, several studies show that in many developed countries, also due to COVID-19, there has been a notable increase in the use of online therapy and that "the size of the effects were large in the treatment of depression, anxiety disorders, severe health anxiety" and many other pathologies. (Hedman et al., 2012). It is agreed that the potential benefits of an online treatment are mainly: accessibility, time saving, consistency, confidentiality, flexibility.

However, this has enormous limits at the moment, as if on the one hand the new digital technologies make life easier in such difficult times, on the other it happens that large sections of the population remain outside it. The result is a widening of the digital divide between generations and even within the elderly population.

Our country has one of the lowest connectivity rates in Europe: only 16% of families made up of only the elderly claim to have "current" access to the Internet.

As for Italy, in fact, "in the European Commission's Digital Economy and Society Index (DESI, 2020) it ranks 25 out of 28 EU Member States, with a score about 9 points lower to the EU average (43.6 vs 52.6)". Digital prejudices are also not to be underestimated. It starts from the idea, widely spread in society, according to which men and women, having reached the time of old age, must "step aside". After all, what could older analogues share with young "digital natives"?

Analyzing the literature, no comprehensive tools were found for assessing adherence to therapy and digital skills for the chronic pluripathological elderly patient. Hence the need to build an "ad hoc" one and start the validation process through the active involvement of patients.

In parallel with the definition of a new investigation tool, the other aims of the research were: to analyze the factors that affect adherence to therapy and to identify digital and educational strategies that increase the level of awareness of patients.

The "Questionnaire on adherence to digital therapies and technologies" was therefore identified, which would help answer the following research questions:

- "What is the compliance level of chronic elderly patients in polypharmacy?"
- "Which aspects of pharmacological treatment does the patient find it more difficult to adhere to?"
- "The socio-demographic characteristics, the level of education and digital skills affect compliance? "

### **Materials and methods**

The construction of a survey tool would have analyzed the daily habits of patients, the use of electronic devices and educational perspectives. The patients in question had to be at least 65 years old, be treated in polytherapy and be affected by multiple pathologies. The sample taken into consideration is also a convenience sample, without recruitment, and patient involvement was based on availability and consent to research.

For the construction of the tool, an analysis of the literature was carried out which led to the revision of the "Morisky Medication Adherence Scale" and of the "E.CA.RE - elderly home care residential engagement", from which some questions have been taken and are still now in the investigation tool.

The questionnaire then went through several phases in its realization:

- Generation of the items through careful analysis of the scientific literature on the field of



investigation and similar experiences;

- Provisional elaboration of the questionnaire, submitted to a panel of experts in order to analyze the validity of the content;
- Collecting feedback between experts and authors by analyzing the validity of the facade;
- Administration to 15 patients informed and trained on the purpose of the questionnaire, who were asked to formulate an opinion on the comprehensibility of the items and therefore on the contents of the questions (reliability analysis through pilot tests);
- Improved questionnaire, taking into account all the feedback from the 15 patients and the aforementioned experts;
- Administration to 55 EUPATI patients (national association of patients and caregivers), informed and trained on the purpose of the research;
- Analysis of construct validity.

### Results

The survey sample was analyzed by dividing it on the basis of some variables: sex, age of the subject, pathologies, drugs taken, educational qualification and residence.

As regards adherence to therapy, it was found that patients have a good doctor-patient relationship: 87.3% of patients have a family doctor who knows the therapy in its entirety and, in the case of suggestions from a specialist about a change in therapy, 72.7% inform their family doctor. In reference to the continuity in taking drugs, many patients also have a good relationship with the drugs taken, as they rarely stop taking them: 63.6% say they never forget to take the therapy daily, without interrupting its continuity on the basis of one's perception of health or due to the negative effects it may entail. Although it seems a good percentage of adherence to the therapy, the responses to the different items in this section indicate that on average about 22% of patients do not consistently respect their treatment plan. As regards the second area, namely the importance of an educational path in the correct use of therapy and the ability to make decisions in a shared way with the expert, it emerged that for 90.9% of patients it is very / extremely important to participate in individual meetings with the expert at the health facility, while following insights from your computer at agreed times is equally important for just over half of the people (54.6%). It therefore appears that the patient's relationship with the expert is preferred if personally at the facility, but not everyone would reject the possibility of deepening remotely from their home or smartphone. In fact, 60% would consider the possibility of sharing information with the expert via an online remote platform very useful.

As regards the last area, digital skills, it appears that 61.9% almost always do research on their pathology and more than half of the patients evaluate the reliability of the sites, in particular women between 65 and 75 years old, patients living in the North of the country and those with a higher education diploma or degree. In the analysis of information, therefore, the level of education and residence are rather determining factors. Furthermore, smartphones and computers are mainly used to search the Internet for this information and it is surprising that almost half of the participants (44.4%) learned how to use them on their own. The last interesting and important result consists of 54.6% of the population who believe that the use of an application on the phone in managing all their therapy or at least in some things could be of fundamental help. In fact, it appears that those who can benefit from this use are the youngest patients among the elderly, ie between 65 and 75 years. In a further gender analysis, about 60.6% of women would use an application, while among men less than half.

From the considerations we can make regarding the research on the topic of adherence to therapy, it could be expected that older patients are less adherent to treatments, considering that they may have problems with memory, vision and hearing, which make them more susceptible to misunderstandings regarding the drug regimen to be followed. (Jin. Et al., 2008) In reality it emerged that it is younger people who have more difficulty in adhering to the drug regimen, in fact they are more unfriendly in taking drugs as they tend to stop it more if they feel better and if they forget about it more frequently.

The fact that older people generally adhere more to therapeutic regimens is also confirmed by other studies. (id, 2008) Sometimes, both the cultural beliefs of the patients (Barnes et al., 2004) and psychological and social aspects (La Sala et al., 2014) are responsible in the assumption of therapy and in its interpretation, as well as gender, demographic and socio-demographic. Regarding the latter,



if we think of the variable "educational qualification" or gender, the Italian data are rather poor, in fact it appears that (AIFA, 2021) "those with a diploma have a 16% higher risk of dying than a graduate, who has the middle school certificate of 46%, who has the elementary one of 78% ". Furthermore, in section 3 of the AIFA Atlas (id, 2021) it appears that most of the most common diseases tend to affect Central and Southern Italy more. This makes us think that therefore any increase in mortality is not due only to personal aspects, but also to geographical ones, also because despite the universality of the Essential Levels of Assistance (LEA) prepared by the NHS, there are still differences between regions today. It should be added that this analysis was carried out only on patients residing in Italy, but it is not certain whether the same result can be obtained in another country.

Several studies (Squillace A. et al., 2018) «confirm that therapeutic non-adherence is particularly critical in patients with long-term therapies and polytherapy, with all the consequences that may derive from a discontinuity of treatment. This is very often due to the psychological and emotional condition of the chronic patient which results in discouragement, loss of confidence, demotivation with respect to the effectiveness / benefits of the treatment or the complexity of managing the therapy " .

On the other hand, our research shows that those who have more than 2-3 pathologies are the most adherent to the therapy and those who are most committed to its continuity.

As regards the level of education, some differences were highlighted in therapeutic adherence, in particular in two areas. The first is continuity in taking the therapy, in which it was noted that people with a lower educational qualification tend to interrupt it more frequently: this mainly concerns those who have no educational qualification or have an elementary school certificate. Finally, the social support of their family members is important for patients, as sometimes some differences in adhesion can be associated with psychosocial variables and personal characteristics that can affect the level of compliance (Cicolini, 2012).

### **Conclusion**

The "Questionnaire on adherence to therapies and digital skills" was designed specifically to assess adherence to drug therapy, analyzing in particular the importance of the patient's digital skills and a path shared with the expert. In the so-called "digital age" there are already technological tools in use for the management of some diseases, but in our country there are still few elderly people who are starting to interface with this world. In the study, the aim was therefore to analyze the patient's degree of compliance and the willingness to take a path that can lead to the management of the disease even independently through the use of applications recommended by your doctor. If we all contributed to reducing the generation gap and above all digital, different applications [apps] could be used to educate the patient and to improve the dialogue between patient and doctor.

For example, the University of Hong Kong has shown that instant messaging apps (eg WhatsApp) can be used in the fight against smoking. Chinese researchers conducted a study of nearly 1,200 smokers, most of whom were reluctant to quit in the short term. Through instant messaging, half of the participants received support messages and invitations to contact smoke-free centers. After 6 months, the percentage of participants who no longer smoked was significantly higher in the chat-supported group than in the control group.

Thanks to the smartphone, it would therefore be possible to help the patient to take medications as prescribed by the doctor: using an application it would be easier to keep track of the pills taken, receive reminders on which ones to take and note any symptoms that have arisen.

It is useful to help awaken a person's interest in technology. It is therefore essential that the elderly understand what the potential of technology is and how thanks to it they can improve their way of life, solve problems and cultivate their personal interests.

Often, their impression in front of the computer and / or smartphone is that of an impersonal and cold tool, which involves incomprehensible language and a complex approach.

Using a simple lexicon is necessary for the elderly to become familiar with an unknown world such as the computer world. The simplest method to encourage learning of new technologies is to explain with practice. In all this, it is also essential to explain the risks associated with the Internet: the person will have to learn as soon as possible to distinguish trustworthy sites from those at risk, and become aware that you should never provide your personal data on the Internet. Precisely for this reason, in



the case of using an application to manage their health, the patient will have to rely on the competent doctor.

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