

Working in “smart” mode during the Covid-19 pandemic. Validation of a questionnaire in the healthcare sector

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Abstract

Background. During the most difficult phases of the Covid-19 health emergency, when access to the usual work location was not allowed due to the constraints related to the pandemic, Smart Working enabled business continuity in the face of the ongoing health emergency. Modern technology serves a new way of working, allowing workers to effectively manage their professional and personal spheres in a world that increasingly requires them to optimize their time.

The main objective of this research is to validate a Smart Working questionnaire administered to healthcare workers.

Methods. The questionnaire, reported in Annex I, consisting of 30 questions and submitted electronically through Google Forms, was administered in Italian to healthcare personnel of the Teaching hospital Umberto I and Sapienza University of Rome between September and October 2020. The questionnaire analyzed the characteristics of the sample and investigated the perception and attitude of healthcare personnel towards seven different aspects of Smart Working.

A descriptive analysis of the sample examined and an internal consistency analysis was performed through the use of the SPSS (Statistical Package for Social Science) program version 25.0.

Cronbach's alpha statistical indicator, which measures reproducibility over time, reliability, and homogeneity of questions, was used for the analysis.

Results. A total number of 53 health care providers answered the online questionnaire. The majority of the respondents were female (60.4%); 73.6% of respondents reported having a college degree or a higher educational level. The analysis showed an overall standardized Cronbach's Alpha of 0.709, which corresponds to a good reliability.

In the items analysis, the alpha value ranged from a minimum of 0.652 to a maximum of 0.756.

Conclusions. The present tool is adequate to investigate attitudes towards Smart Working among healthcare workers. *Clin Ter* 2021; 172 (3):211-214. doi: 10.7417/CT.2021.2316

Key words: smart working, Covid-19, pandemic, validation, questionnaire

Introduction

The Covid-19 emergency has put Smart Working at the center of media's attention. Working remotely made it possible to meet the limitations due to the current health emergency while ensuring business continuity. The current form of Smart Working, also referred to as “agile working”, is not the original form but rather an experiment of in-remote working related to the inability to access one's usual location due to the restrictions related to the pandemic.

During the evolution of the pandemic, following the total lockdown instituted in March 2020, Smart Working is recommended in the phases of highest incidence of contagions and used mainly in *mixed mode* to preserve both the safety of workers and clients.

This step is made clear in Article 18, paragraph 1, of Law 81/2017 in which it is stated that “The work performance is performed, in part inside company premises and in part outside without a fixed location”¹

The smart worker is put in the position to operate complex work processes remotely, communicating with work colleagues and achieving results that become the object of evaluation.

The experience of this new “smart” modality is increasingly leading towards the massive diffusion of autonomous, subjective and decentralized forms of work; technological progress offers rapid access to information and reduces space-time constraints. The opportunities of these developments are complemented by the irreplaceable performance and creativity that comes from the human intellect.²

Modern technologies put at the service of a new way of working, as experienced during the pandemic, allow the worker to manage in complete autonomy the organization of space and time of execution of his employment.

Therefore, working in “smart” mode would allow workers to effectively manage their professional and personal spheres in a world that increasingly demands optimization of their working time. Even in the past, various forms of flexible work have been used, starting with telework and ending with

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current forms of Smart Working that are not regulated but in fact adopted as a substitute mode, especially in the context of the health emergency Covid-19 related.³

Following the new principles learned from the experience of Smart Working in recent months, workers should be encouraged to assume greater autonomy in the choice of working arrangements, experimenting with new solutions and learning to measure themselves against results.

However, this requires a cultural shift that cannot happen quickly and above all must be supported by communication, training and support initiatives for people.

The main objective of this research is to validate a questionnaire on Smart Working administered to the healthcare workers.

The study is also useful for the purpose of choosing targeted interventions to be adopted in the company to raise awareness and knowledge on the subject and the implementation of Smart Working programs, especially in light of the recent law no. 81/2017 that regulates it.

Materials and Methods

The questionnaire, submitted in an electronic way through Google Forms, was administrated in Italian language to the healthcare workers of the Teaching hospital Umberto I and Sapienza University of Rome between September and October 2020. The personnel investigated belonged to the following different professional categories and subcategories of healthcare workers: Doctors, PhD Student, administrative workers, Teachers and Technicians.

The questionnaire is based on the article by La Torre et al.³, which validates a survey of 29 items aimed to investigate the attitude towards Smart Working. A further question, dealing with the utilization of a Smart Working mode after the pandemic, was added. A total number of 30 questions were included, divided in two sections: the first section focuses on the characteristics of the sample, the second investigates the perception and attitude of the healthcare personnel towards seven different aspects of Smart Working. The following aspects are taken into account: general aspects, feasibility, motivations, costs, performance, career and companies' support. The complete questionnaire is reported in **Annex 1**.

To evaluate the internal consistency of the questionnaire, i.e. consistency between the items, Cronbach's alpha was utilized⁴. This statistical indicator measures reproducibility over time and the homogeneity among the questions. It refers to the degree of correlation between the analyzed variables and, in general, a questionnaire has a good internal consistency when values higher than 0.70 are obtained.

In the present study a descriptive analysis of the examined sample and an internal consistency analysis was performed through the use of the SPSS program (Statistical Package for Social Science) version 25.0, after coding the variables. In this last case we proceeded to the transformation of the qualitative variables into quantitative ones, by means of binary coding or by attributing the value of "0" to the negative answers and that of "1" to the affirmative ones.

Results

A total number of 53 health care workers answered the online questionnaire. The characteristics of the sample population are shown in **Table 1**.

The majority of the respondents were women (60,4%). Four age classes were identified, with 26,4% of the personnel aged between 20 and 35 years, 18,9% between 36 and 45 years, 22,6% between 46 and 55, and 32,1% older than 55. Less than half of the sample (43,3%) reported to be married, while 52,8% had one or more children. 73,6% of the respondents declared to be either graduated or with an higher education level.

Regarding the professional classification, 56,6% had a full-time job and 60,4% lived and worked in the same city or at least in a 50-kilometer range, while the other 39,6% lived more than 50 kilometers away from the workplace.

The health care workers doing Smart Working that answered the survey had different business roles: the majority worked in the administrative field (39,6%), 26,4% were professors, 22,6% were doctors, 5,7% were PhD students and 5,7% technicians.

The teamwork opted to perform the analysis of internal consistency of the 19 questions regarding different aspects of the Smart Working experience (question 11 to 16 and 18 to 30 of the second section of the questionnaire). The analysis showed an overall standardized Cronbach's Alpha of 0,709, corresponding to a *good* reliability.

Table 1. Characteristics of the sample population

Variable	N (%)
Gender	
Females	32 (60,4)
Males	21 (39,6)
Age groups	
20-35 years	14 (26,4)
36-45 years	10 (18,9)
46-55 years	12 (22,6)
>55	17 (32,1)
Civil status	
Married	23 (43,3)
Other	30 (56,6)
To be a parent	
Yes	28 (52,8)
No	25 (47,2)
Level of education	
High school licensed	14 (26,4)
Higher level of education	39 (73,6)
Professional classification	
Part-time	23 (43,4)
Full-time	30 (56,6)
Distance between home and work	
≤50 km	32 (60,4)
>50 km	21 (39,6)
Business role	
Doctors	12 (22,6)
PhD Student	3 (5,7)
Administrative roles	21 (39,6)
Teachers	14 (26,4)
Technicians	3 (5,7)
Total	53 (100)

In the analysis by item the value of the alpha decreased to a minimum of 0,652 when question 26 was deleted, while the deletion of questions 12, 13, 15, 16 and 29 led to an increase in the value of alpha. A maximum of 0,756 is reached with the deletion of question 12. The full analysis is reported in **Table 2**.

Discussion

The sample taken into account showed a high level of education compared to the one of the Italian general population⁵⁻⁶. This could easily be explained by the setting where the questionnaire was administered, which was the one of a University Hospital. There was also a higher share of women, and this could be due to the fact that, especially

in the Nation Healthcare System, more women work in the administration field, which was the field where the relative majority of the respondents were employed⁷. We can also see how a high share of the interviewees lived relatively close to their workplace. This can have an impact on the perception of Smart Working as an opportunity to spare the work-home travel money and to improve of the quality of life.

The questionnaire seeks to analyze the impact of Smart Working in the professional world, as well as reactions and opinions regarding this new flexible working method. Within this objective there is the desire to understand what attitudes Italian workers have towards Smart Working. The items used try to investigate different aspects, from the relationship between work and family management, to the impact on costs and quality of life, advantages and disadvantages related to the change in travel and the perception of

Table 2. Statistical analysis of internal consistency of the questionnaire

	<i>Scale mean when the item was deleted</i>	<i>Scale variance when the item was deleted</i>	<i>Correct Item-total Correlation</i>	<i>Cronbach's Alpha when the item was deleted</i>
D11. How interested are you in the “smart” way of working?	9,6415	10,157	0,393	0,692
D12. Do you think that working in “smart” mode can penalize the size of teamwork?	10,2075	11,821	-0,324	0,756
D13. Do you think that working away from the workplace can complicate your work properly in some way?	10,3585	11,888	-0,390	0,751
D14. Compared to your job role, do you think it is feasible to work in “smart” mode for a certain number of hours a week?	9,6226	10,393	0,302	0,699
D15. Do you think that working in “smart” mode can be more difficult at certain times of the year?	10,3208	11,530	-0,253	0,744
D16. Do you think that agile work can make it more difficult to deal with your customers/users?	10,3774	11,393	-0,216	0,737
D18. Do you think that smart working can improve the reconciliation between your working life and your private life?	9,8491	9,592	0,410	0,684
D19. Do you think that smart working can improve the way you organize your work?	9,9811	8,788	0,656	0,654
D20. Do you think that smart working can improve the quality of your life?	9,8113	9,079	0,636	0,661
D21. Do you think that working in smart working can have a medium-long term effect on the costs you face to reach your place of work?	9,8302	10,298	0,164	0,709
D22. Do you think that working in “smart” working can have a medium-long term effect on the costs that the company as a whole faces?	9,8679	9,809	0,323	0,693
D23. Do you think that working in “smart” working mode can help you achieve your business goals more efficiently?	10,0566	8,978	0,579	0,663
D24. Do you think that the working mode in smart working can help you take less hours of leave? / To do less work absences?	9,8679	9,078	0,593	0,664
D25. Do you think that the adoption of this working method could be useful to improve your performance within the company?	9,9245	8,917	0,625	0,659
D26. Do you believe that the adoption of this working method can be useful to improve the performance of everyone within the company?	9,9434	8,747	0,682	0,652
D27. Do you think that the adoption of this working method could be useful to increase company profits?	9,9057	9,164	0,541	0,669
D28. Do you think that “smart” work can foster your career progression within your company?	10,3962	10,167	0,298	0,697
D29. If your company decides to adopt smart working, do you consider it useful to attend an ad hoc training course?	10,2264	10,679	0,027	0,723
D30. After the Covid-19 emergency, do you think it will be appropriate to carry out smart working again?	9,6604	9,844	0,517	0,682

clear transformations in professional goals and performance, both individual and corporate.

Results of Cronbach's alpha showed a *good* reliability, although the level appears variable through questions. Among the items that contribute to lower the value of the alpha, question 12 and 16 investigate the effects of Smart Working on relationships, either with colleagues or clients, and the size of teamwork. These are questions that are more likely to rise a general consensus, especially when underlining the negative effects. Even a worker that has a positive attitude towards Smart Working, thanks to the possibility of sparing money and spending more time with the family, can find this way of working negative regarding either the teamwork size or the interaction with the client. Overall, the spheres more related to human interactions seemed to generate unanimous reactions. Scientific literature recognizes how Smart Working can enhance alienation feelings and endanger interpersonal relationships and the direct sharing of knowledges.⁸⁻⁹

Other questions that show an increase of the value of alpha when deleted are the ones investigating less subjective aspects of the Smart Working, such as the fact that "smart" mode can be more difficult at certain times of the year (question 15), that can have some general negative aspects (question 13) and that handles with the utility of an "ad hoc" training course for this way of working (question 29). These topics are less related to the personal attitudes, although they can be very interesting for the employer, which can retrieve useful information in order to organize the work more properly.

In general, questions that strength the questionnaire and increase the reliability are the ones more focused on attitudes, supporting the role of the survey in understanding workers approach to the method.

Comparing this paper with La Torre et al³, the alpha's value obtained is a little bit lower. This is not explained by the inclusion of the last question, which gives reliability to the survey. The reasons could depend on the lower numerosness of the sample, or explained due to the fact that the present questionnaire was administrated during the unique pandemic period.

There are some limits to acknowledge: the sample taken into account had a high educational level, not always representative of the average Italian work field. Moreover, the numerosity of the sample was small, with a disbalance among female and male.

Eventually, it is important to underline that, during the pandemic period, the Smart Working mode was not an informed and aware choice of the worker, rather an imposed necessity. Furthermore, the pandemic has been having a strong impact on every aspects of people's life: therefore, the overall unique situation could have had an impact on respondent's attitude.

Nevertheless, this study provides a reliable tool which could help investigate the attitudes and perception of the Smart Working approach. It helps retrieving information about the personnel's general attitude towards this way of

working but also could give the employer an instrument to discover weaknesses and strengths of this working method and to investigate the employees' opinions.

Conclusion

This tool is adequate to investigate attitudes towards Smart Working also in the healthcare setting. Moreover, the study is also useful to choose which targeted interventions can be adopted in the companies, in order to raise awareness and knowledge on the subject and to implement Smart Working specific programs.

Funding: this study did not receive any funding.

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