

Review

Impact of Teleworking on the Health and Well-Being of Peruvian Workers in Times of Pandemic

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Abstract: The objective of this study was to establish the impact of teleworking on the health and well-being of Peruvian workers in times of pandemic. In this study, two questionnaires were applied to the selected sample made up of 428 workers from three organizations dedicated to the field of services: telecommunications, telephony and call centers in Lima. The findings indicate that, in the teleworking variable, the regular level prevailed at 41.12% due to weaknesses such as improvisation in the coordination to carry out the tasks, while the health and well-being variable was located at a moderate level at 35.28% reflecting that some workers were affected by COVID-19 and other illnesses related to it. It was possible to establish the incidence of health and well-being in teleworking carried out by Peruvian workers in times of pandemic; which led to results in the Telework dimension considered by the workers within the regular line of the survey; and the dimension of health and well-being was estimated within the moderate line of the survey. The conclusions of the study allow the creating of precedents to generate policies aimed at improving the conditions of this type of work, as well as generating new lines of research on the subject of teleworking.

Keywords: telecommuting; health; well-being; workers; workload



Citation: Morán, R.C.D.; Agüero Corzo, E.d.C.; Sánchez Soto, J.M.; López Gómez, H.E. Impact of Teleworking on the Health and Well-Being of Peruvian Workers in Times of Pandemic. *Sustainability* **2022**, *14*, 15876. <https://doi.org/10.3390/su142315876>

Academic Editors: Magnus Moglia and John Hopkins

Received: 26 October 2022

Accepted: 22 November 2022

Published: 29 November 2022

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1. Introduction

Due to the spread of the coronavirus, most companies have requested their employees to work from home with the support of information and communication technology (ICT); in other words, under the teleworking modality [1]. Likewise, as a result of the restrictions on transfers, travel and the implementation of government guidelines in many countries during the COVID-19 pandemic, a significant increase in teleworking has been observed [2,3].

Therefore, the current circumstances, globalization and technological advancement have led to teleworking from home, which has been implemented in modern economies. Telecommuting from home was quickly established by the spread of the virus during the COVID-19 pandemic [4] and will likely continue to be implemented after the pandemic. However, there is great ignorance regarding how this measure affects the health and well-being of workers [5].

Telecommuting facilitates flexibility and allows for a strong work–family balance, while reducing the environmental impacts of mobility. Although it has benefits, the implementation of teleworking practices across Europe, specifically in the case of teleworking at home, is progressing more slowly than expected [6].

In Peru, during the COVID-19 pandemic, “remote work” is a modality legally originated, as the new activity to carry out remote work. This is a way for workers who had a face-to-face work modality to continue providing services from their homes or confinement

space due to mandatory social isolation, as indicated in Emergency Decree No. 026-2020, Supreme Decree No. 010 -2020-TR and other complementary [7–9].

However, in the Peruvian legal system, in Law 30036 issued in 2015 that regulates teleworking, the most outstanding aspects when defining teleworking are: the use of ICTs, the subordinate work of tasks and the non-physical presence of the teleworker, as reflected in article 2 of the aforementioned law [10]. Due to the fact that teleworking was legally regulated in Peru before the pandemic, some differences and similarities arose between remote work and telework; however, the main peculiarity in both modalities is that it is remote work. However, while remote work is carried out from the worker's home or place of social isolation, telework can be carried out from anywhere [11,12]. Teleworking in times of pandemic has avoided traditional occupational risks by reducing work accidents; although, there are negative consequences, especially in the mental health of workers [13].

In times of pandemic, according to the National Institute of Statistics and Informatics (NISI), in Lima, the level of employment fell significantly, where men and women were similarly affected by containment measures, the drop in the number of employed was higher in the younger age group. The employment of young people between 14 and 24 years of age decreased by 27.8%, which was generated because youth employment has a higher rate of informality, and they have fewer forms of labor protection; therefore, they are easily fired from work. Likewise, among the educational groups, the most affected have been the intermediate levels, while those employed with university studies and those employed with up to primary education registered somewhat smaller falls [14,15].

In Peru, according to the Telework Module of the Ministry of Labor and Employment Promotion, it was reported that until January 2017 there were 648 teleworkers in the country and by 2020 there had been an increase of 2200 teleworkers, and with the arrival of the pandemic in July of 2020, amounted to 220,000 in the form of remote workers [16,17]. It should be noted that according to data from the Institute of Peruvian Studies (IPS), in June 2020, 45% of workers continued to work. Of them, 19% developed work from home, 17% went to work with authorization and 8% worked without formal authorization [18]. Hence, the reality of teleworkers in Peru during the pandemic was one of emotional, legal and informatics uncertainty, going through a labor scheme that, like any system, has its risks and requires care [19].

In fact, the importance of teleworking in Peru during the pandemic is based on the social edge, in which society can advance on aspects related to social inclusion, giving job opportunities to many workers who are limited and relegated to being able to access a job. The optimization of time for the worker is a relevant aspect, since teleworking in times of quarantine by COVID-19 limits face-to-face activity, and obviously, it was not necessary to travel to the workplace. This prevents the spread of the virus, generates a positive impact on caring for the environment and also saves time and transportation costs. From the perspective of the employer, the importance of teleworking is in the optimization of economic resources for companies; for the country's economy, it is also important because new jobs are generated [19].

In this study, workers from three organizations dedicated to the service areas were considered: telecommunications, telephony and call centers; located in Lima who worked in teleworking conditions before and during the COVID-19 pandemic. The hypothesis handled: there is an impact of teleworking on the health and well-being of Peruvian workers in times of pandemic.

This document contributes to the previous literature by (i) providing important data on the impact of teleworking on the health and well-being of Peruvian workers in times of pandemic, (ii) analyzing the behavior of teleworking emphasizing the dimensions: technical support, workload, compliance with work and the state of the work environment, (iii) analyzing the health and well-being of workers in teleworking conditions during the pandemic from the dimensions: physical, emotional and social and (iv) use logistic regression and the Nagelkerke coefficient for the Verification of the impact of Teleworking on the health and well-being of Peruvian workers in times of pandemic.

2. Literature Review

Teleworking is defined as the work that is carried out remotely, far from a centralized workplace, using ICT to be able to communicate with your employer and carry out the tasks of teleworking. In that vein, telecommuting can take place in a variety of locations, such as satellite offices and co-working spaces; however, it is usually related to working in the employee's own home (work from home) [20].

In addition, telecommuting from home is offered to employees of various organizations with the expectation that it will improve the work–life balance and promote staff well-being. Therefore, various studies support the benefits of teleworking at home, by itself or as part of the coordination of broader flexible tasks [21]. For the International Labor Organization (ILO), teleworking is defined as the use of ICTs, such as smartphones, tablets, laptops and/or desktop computers, to carry out tasks that are carried out outside the employer's facilities. Therefore, teleworking implies work carried out with the help of ICT carried out outside the employer's facilities [22]. Additionally, the ILO states that the employer will provide the worker with the necessary equipment and tools to carry out their work [23,24].

Currently, teleworking is defined as the provision of a remote service, using online and telecommunications technologies [25–29], allowing employees to perform their duties while maintaining the link with the employer. The place where the worker carries out his activities and the use of ICTs constitute two fundamental elements of teleworking [30,31]. The above is of great interest, since almost a third of the domestic workforce worked from home during the pandemic, a rate almost six times higher than the pre-pandemic level. At least one member of 35% of US households replaced face-to-face work with telecommuting; these individuals tended to belong to higher-income households [32].

On the other hand, the COVID-19 pandemic has pushed a large number of employees, already facing stress from the health risk itself, to work from home. To compound this stressor, many managers are now leading remote teams for the first time [33]. For this reason, the COVID-19 pandemic has represented a great challenge not only for health systems but also for the world of work, which has been characterized by the expansion of teleworking [34].

Among the limitations of teleworking during the pandemic mentioned is having to work from home, since in some cases the worker finds it difficult to coordinate and separate the tasks of the home and those of work [35]. Additionally, the configuration of the home also affects teleworkers and their children; likewise, in the case of women who are limited in accepting work from home under the scheme of unattended supervision or little supervision, such as call centers. Although it allows them to take care of the home and the family in a more relaxed way, this leads them to receive low wages and little projection of their work. [36].

In the case of teleworking, this presents some potential disadvantages, represented by the possible negative implications on the health of workers. The main health hazards for telecommuters are: the unavailability of ergonomic work equipment and a dedicated work area, the risk of overwork and the psychosocial implications of working from home. Telecommuting can affect both physical and psychosocial health, but some authors also describe the potential health benefits [34].

Additionally, some studies have revealed the negative psychological effects of quarantine, including symptoms of post-traumatic stress, confusion and anger [37]. Infected people experience increased pressure due to fear, financial stress and limited interactions [38]. Other studies reveal various impacts of teleworking on the work-family balance, specifically in two areas: job satisfaction and satisfaction with the distribution of childcare activities [39].

Likewise, teleworking offers various advantages for both the organization and the teleworker. Among the advantages of the organization, it reports an increase in productivity and a reduction in costs related to the hiring of temporary personnel, an increase in worker

satisfaction and a decrease in sick leave. In relation to workers, they indicate a better reconciliation between family ties and work aspects [40,41].

Regarding the dimensions of teleworking, the following are described: technical support, workload, fulfillment of tasks and the state of the work environment. Technical support refers to access to computer equipment and technological support. The workload constitutes the level of difficulty of the work performed and the time needed to perform the assigned tasks. The fulfillment of tasks is the degree to which the scheduled tasks or activities are fulfilled in the estimated time and with quality. Finally, the state of the work environment constitutes the relationship that exists between the members of the work environment [42].

In general, health implies a set of elements, within which the World Health Organization (WHO) includes mental well-being [43], described as a dynamic process that allows human beings to develop their abilities, face stressful situations of daily life, carry out activities productively and carry out actions in their communities [44].

In the same way, for the health and well-being variable, it is important to point out that when talking about occupational health or occupational well-being it assumes the context of the dimensions of physical, mental and social safety [45,46], in which the employees of an organization, with the purpose of foreseeing control measures aimed at promoting well-being and reducing the risks of illnesses or accidents. Considering that physical and mental health is one of the aspects that contribute to people having a better quality of life, and even more so if it corresponds to the work environment. Then, a good state of health allows the proper development of work activity and constitutes the basis for achieving and maintaining adequate well-being at work [47,48].

Additionally, stress is considered a factor that threatens well-being at work and contributes to the insufficiency of the personal and social life of individuals. Therefore, it is convenient to reduce stressful situations at work to increase that well-being at work, which produces satisfaction in personal life and greater belonging to organizations [49]. For this reason, the International Labor Organization (ILO) promotes programs for the health care and well-being of workers and their families. This is done through methods of prevention and assistance in the areas of stress, conflictive labor relations and staff free from alcohol and drug use [50].

Obviously, for labor well-being, the emotional health and motivation of workers are important indicators, since they demarcate the actions to be promoted by organizations to protect health. This has a positive effect on the work environment, on the quality of the work carried out and on the service provided. Therefore, emotions influence the motivation, creativity and performance of the worker [51].

In Peru, due to confinement due to the pandemic, consequences have been generated in the health of people and affectations in the labor, social and economic spheres. Thus, the COVID-19 pandemic has probably changed the way people live a lot, bringing uncertainty, changes in lifestyle and daily routines, economic decline and social distancing, which is why people tend to feel stress, anxiety and depression [52].

What was previously expressed is of great importance in this study, since the COVID-19 pandemic, in addition to confinement, produced social distancing and quarantine. This led to teleworking and remote work being carried out by the majority of employees and workers of public and private organizations in Peru. This opened important gaps regarding legal, health, use of technological equipment, gender, labor and structural conditions. The generation of policies is necessary to promote the teleworking modality considering adequate conditions to carry out the tasks that may affect the employee, the employer and the country's economy.

Among the antecedents that allow supporting and carrying out the demonstration contrast, there is an investigation carried out on a sample of 3771 teleworkers of a company in Canada. The objective of the study was to investigate the influence of teleworking during the COVID-19 pandemic on the psychological health and performance of an organization's employees. The results indicated that teleworking in workers created additional demands,

such as task interdependence and professional isolation, which had negative effects on teleworking performance by increasing the frequency of perceived stress. However, there was organizational support from the human resource department to play a mediating role towards the effect of professional isolation when performing the teleworking modality [53].

Moreover, a longitudinal study was carried out with the purpose of evaluating the effects of teleworking on well-being and self-reported performance during the COVID-19 pandemic. The research had a sample of 111 collaborators, selected using a non-probabilistic sampling method to recruit participants in different occupations and locations in Spain. Since the participants carried out teleworking in confinement in their homes, consequently, the surveys were applied with Google Forms and distributed by email and WhatsApp. The results indicated that the collaborators have felt satisfied with this work modality, which showed positive effects on their well-being and performance. Likewise, well-being was related to satisfaction and performance. Similarly, employees with children presented a lower satisfaction with teleworking [54].

Additionally, a study carried out in Indonesia with the purpose of investigating to what extent the mental well-being of employees affects their productivity while working from home during the COVID-19 pandemic, the sample was 472 collaborators who answered the Depression, Anxiety Scale and Stress (DASS-21) and the Individual Work Performance Questionnaire (IWPQ). The findings indicated that the prevalence of depression was 18.4%, anxiety 46.4% and stress 13.1% with relatively good productivity, pointed out that gender, age, educational level, work experiences, status marital status, number of children, and the nature of the organization were associated with employees' psychological health but not with their productivity. The availability of the workspace also influenced both results, concluding that the model showed a negative connection between psychological well-being and employee productivity [55].

On the other hand, an investigation was carried out on the impact of confinement on the musculoskeletal health of the staff of two Spanish universities during the execution of teleworking. The study was carried out with a sample of 472 workers to whom the modified Nordic questionnaire of standardized Kuorinka, the perceived stress scale and another on sociodemographic data were applied. The results indicated that the areas of pain noted during the confinement period were lower in all cases; likewise, the frequency of physical activity performed increased significantly during the confinement period. It was also observed that the type of physical activity performed changed during this period, with a preference for strength training and stretching exercises. With the above, it was determined that confinement generated changes in the lifestyle and musculoskeletal pain of university workers [56].

Likewise, an investigation that had the purpose of evaluating the association between the working day, work and family conciliation and the quality of life of workers during the Chilean health emergency due to the COVID-19 pandemic; the sample was 336 collaborators. The results indicate that the workers had a low quality of life score, associated with age ($p < 0.05$). Workers ≤ 44 years old showed lower risks of deterioration in the Physical Component Summary (OR: 0.54) than the age group ≥ 45 years old; simultaneously, the younger group (≤ 44 years) had a higher risk (OR: 2.46) of deterioration in the Mental Component Summary than workers older than 45 years. A total of 78.7% of workers reported having increased their working hours during the COVID-19 pandemic due to telecommuting and 86% indicated negative effects on their work–family balance. Demonstrating that, workers presented low median quality of life scores, especially in the Mental Component Summary, which suggests that it would be beneficial to promote a better distribution of the workload of workers in emergency contexts [57].

Similarly, a study conducted in Lithuania, which aimed to examine office workers' self-reports on the impact of telecommuting on their well-being, health and productivity, handled a sample of 475 workers. The results indicate that telecommuting during the pandemic had a negative impact on the well-being (in the aspect of work–life balance) and health (mainly in terms of mental exhaustion) of office workers. It was also defined that

job performance suffered relatively less. Three observations were reflected in the study: (i) it was found that teleworkers' evaluations of well-being were more correlated with close relationships and age; (ii) teleworkers who live with their parents have the most positive evaluations of telework in the three areas: well-being, health and productivity; and (iii) the overlap between family and work when working from home increases the likelihood that women and young workers are less likely to care about healthy lifestyles. Establishing that, the research contributes to a better understanding of the factors that telecommuters face when working from home and can help companies improve their hybrid work strategies [58].

In addition, a study was carried out in order to explore the experience of teleworkers during the COVID-19 pandemic and how this experience has affected their health and well-being. The sample consisted of 138 people from companies in various fields who answered an online questionnaire. The results indicated that, in certain areas, teleworking during the pandemic has positively influenced health and well-being, while in other areas, health and well-being have been negatively affected [59].

Finally, an investigation was carried out on a sample of 63 educational teleworkers in the City of Chile, in order to examine the impact on their quality of life during the pandemic and pre-pandemic. The results indicate that, in each gender, there were significant differences between pre-pandemic and pandemic times, with greater impact among women in the summary variables of the mental and physical component and in seven of the eight scales of quality of life. The above described gives the perception that the quality of life of Chilean educational workers has been affected by the COVID-19 pandemic. These findings could be related to the work overload by teleworking or feelings of uncertainty, loneliness and fear that the pandemic and its associated confinements aggravated [60].

3. Materials and Methods

This study was developed under the quantitative approach, with a non-experimental design, since no deliberate manipulation of the variables was carried out [61]; it is basic, since its purpose was to expand existing knowledge or discover new knowledge [62]; therefore, extensive information was obtained on the impact of teleworking on the health and well-being of Peruvian workers in times of pandemic. In the same way, according to the level, this study is explanatory since it is a more complex, deeper and more rigorous level of basic research, whose main objective is the verification of hypotheses [62] (p. 92).

The investigation was carried out during the year 2021 in Lima, Peru, considering workers from different organizations that have worked before and during the COVID-19 pandemic under teleworking conditions. The population for this study consisted of 2200 workers who work for three companies under the teleworking modality located in Lima, the capital of Peru. [16]. The sample was selected through a non-probabilistic sampling of an intentional type [63], made up of 428 workers from three organizations dedicated to service items: telecommunications, telephony and call centers located in Lima; specifically in the districts: San Juan de Lurigancho, Jesús María and San Martín de Porres. The results of the study in these 3 districts are generalizable due to their population size, in addition to being accessible to researchers who had mobility restrictions due to COVID-19.

For the collection of information, it was carried out using the survey technique and as an instrument, two Likert scale questionnaires designed with five alternatives or response options were used [63]. To evaluate the teleworking variable the instrument with 36 items and for the health and well-being variable the instrument with 26 items, built taking into account the dimensions and indicators of both variables required by [42,47,48]; Structured with the response options: 1 = Never, 2 = almost never, 3 = sometimes, 4 = almost always and 5 = always.

The questionnaires were built using the Google Forms application and sent to the subjects that formed the sample through emails and WhatsApp so that they could answer the questions of these questionnaires. Table 1 presents the details of the dimensions, indicators and response options for the evaluation of each variable in the instrument.

Table 1. Details of the dimensions, indicators and response options.

Dimensions	Indicators	Items	Response Options
Variable: Telecommuting			
Technical support	Resources needed Equipment used Internet connection ICT	1 to 8	
Workload Hours	Hours of work increase in work Workday Knowledge of activities	9 to 16	telecommuting questionnaire
Fulfillment of tasks	Achievement of goals Organization Feedback Improved results Quality of work	17 to 26	1 = never 2 = hardly ever 3 = sometimes 4 = almost always 5 = always.
State of the work environment	Relationship with superiors Collaboration Opportunities for personal improvement Personal needs Insulation	27 to 36	
Variable: Health and well-being			
Physical	Food and nutrition existing diseases disease prevention Physical activity	1 to 8	
Emotional	Personal growth Autonomy purpose in life Self-acceptance	9 to 16	Health and wellness questionnaire 1 = never 2 = hardly ever 3 = sometimes 4 = almost always 5 = always.
Social	Ability to adapt and self-manage interaction with people self care create links Healthy relationships	17 to 26	

Note. Variables, dimensions and indicators supported by [42,47,48].

The validity of both instruments was verified by expert judgment following the model suggested by [64] and modified by [65], in which three professionals in the methodological area and in the area under study confirmed that they were well designed and the questions in accordance with the proposed objectives. The expert reviewers considered the criteria of clarity, relevance and construct [62]; and verified that each of the items met these criteria, with the content validity index of the instrument being 0.75 greater than 0.58 according to what was proposed by [61], resulting valid and applicable. The experts who validated the instruments are teachers of the private university of the North, in the same way, the ethical aspects of the rector resolution No. 104-2016-UPN-SAC were followed.

Regarding the reliability of the instruments, it was obtained through the application of a pilot test to 20% (86 people) of a sample with characteristics similar to that of this study [60]. The information obtained was processed with SPSS software applying Cronbach's Alpha statistical coefficient, which varies between 0 and 1, where 0 is the total absence of consistency and 1 is the perfect consistency. Similarly, Cronbach's Alpha in its range from 0 to 0.2 the reliability is very low, from 0.21 to 0.40 the reliability is low, from 0.41 to 0.60 the reliability is medium, from 0.61 to 0.80 the reliability is high, from 0.81 to 1 reliability is very high [66,67]. Finally, values of 0.879 and 0.899 were obtained for the

telework variable and for the health and well-being variable, respectively; establishing that both instruments have strong reliability.

After the application of both instruments to the subjects of the sample, the information collected was processed and analyzed using descriptive and inferential statistics using SPSS and Microsoft Excel software, with which the results were presented. Likewise, the hypothesis test was carried out in which the ordinal logistic regression was applied to be able to establish the impact of teleworking on the health and well-being of Peruvian workers in times of pandemic.

4. Results

4.1. Descriptive Results

After collecting the information, it was organized in a database and the descriptive analysis of the sociodemographic profile of the study sample was carried out. Table 2 shows that, of the total 428 subjects surveyed, 67.52% (289) were men, while 32.48% (139) were women; evidencing that the majority of the subjects that made up the study were men.

Table 2. Descriptive analysis of the sociodemographic characteristics of the sample.

Sociodemographic Variables	Details	Frequency (f)	Percentage (%)
Gender	Male	289	67.52
	Female	139	32.48
Total		428	100.00%
Age	20 to 29 years old	82	19.16
	30 to 39 years old	132	30.84
	40 to 49 years old	164	38.32
	50 to 59 years old	32	7.48
	60 to 65 years old	18	4.21
Total		428	100.00%
Location	San Juan de Lurigancho	192	44.86
	Jesús María	88	20.56
	San Martín de Porres	148	34.58
Total		428	100.00%
Time service	1–3 years	152	35.51
	4–7 years	163	38.08
	8 years or more	113	26.40
Total		428	100.00%
Workday	Full-Time (8 h)	289	67.52
	Part-Time (5 h)	139	32.48
Total		428	100.00%

In relation to age of the total number of respondents, 38.32% (164) are between 40 and 49 years old, 30.84% (132) are between 30 and 39 years old, 19.16% (82) are between 20 and 29 and 7.48% (32) are between 50 and 59 years old. While 4.21% (18) are between 60 and 65 years old; therefore, most of the subjects that make up the sample are between 30 and 49 years old.

Regarding the location, 44.86% (192) are in the San Juan de Lurigancho district, 34.58% (148) are in San Martín de Porres, while 20.56% (88) are located in Jesús María; which proves that most of the respondents are located in San Juan de Lurigancho.

On the other hand, according to the length of service, 38.08% (163) have between 4 to 7 years of service, 35.51% (152) have between 1 to 3 years, while 26.40% (113) have between 8 years to more than services; To this end, most of the respondents have between 1 and 7 years of service.

Finally, in relation to the working day, 67.52% (289) carry out their functions full-time, while 32.48% (139) carry out their work part-time; evidencing that the majority of respondents work full-time.

Regarding the descriptive results of the teleworking variable in Peruvian workers in times of pandemic, according to what is observed in Table 3, 41.12% (176) positioned this variable at a regular level, 32.24% (138) located it at a good level, while 26.64% (114) perceived a bad level. In fact, these findings show that a regular level prevails in the telework variable, which reflects that the majority of workers specified that in times of pandemic this modality presented weaknesses. This was motivated, in some cases, by rapid improvisation in the coordination of the execution of the work.

Table 3. Level of the variable and dimensions of teleworking of Peruvian workers in times of pandemic.

Variable/Dimensions	Level	Frecuency (Fi)	Percentage (%)
Teleworking	Bad	114	26.64
	Regular	176	41.12
	Good	138	32.24
	Total	428	100.00%
Technical support	Bad	115	26.87
	Regular	182	42.52
	Good	131	30.61
	Total	428	100.00%
Workday	Bad	120	28.04
	Regular	162	37.85
	Good	146	34.11
	Total	428	100.00%
Fulfillment of tasks	Bad	110	25.70
	Regular	187	43.69
	Good	131	30.61
	Total	428	100.00%
State of the work environment	Bad	111	25.93
	Regular	173	40.42
	Good	144	33.64
	Total	428	100.00%

In Table 3, it is also observed, in relation to the level reached in the teleworking dimensions, that in the technical support dimension, 42.52% (182) perceived a regular level, 30.61% (131) located the dimension in a good, while 26.87% (115) specified a bad level. These results are due to the fact that, in the pandemic crisis, new information and communication platforms and applications emerged that required more learning time for the teleworker, and that some of them did not have the adequate equipment to carry out the work in total confinement.

In the workload dimension, 37.85% (162) placed it at a regular level and 34.11% (146) positioned it at a good level, while 28.04% (120) perceived a bad level, summarizing that the regular level in the referred dimension had the majority. These results show that, during the pandemic, employees perceived a greater amount of workload and little ability to disconnect.

Additionally, in the task performance dimension, 43.69% (187) positioned it at a regular level and 30.61% (131) positioned it at a good level, while 25.70% (110) reported a bad level; in summary, and the majority of those surveyed specified a regular level in this dimension. The foregoing shows that, despite the fact that the respondents carried out their work from home, they owed part of that time to carry out family activities.

Finally, in the state of the work environment dimension, 40.42% (173) reported a regular level, 33.64% (144) placed it at a good level, while 25.93% (111) indicated a bad level; which shows a predominance of the regular level in this dimension. The findings found

that, when executing the tasks in total confinement, there must be greater communication, monitoring of the tasks, integration and improvement of the work environment.

The findings presented in Table 4 referring to the variable health and well-being of Peruvian workers in times of pandemic infer that there is a predominance of the average level in this variable, which reflects that some of the respondents suffered from the conditions associated with the pandemic virus.

Table 4. Level of the variable and dimensions of the health and well-being of Peruvian workers in times of pandemic.

Variable/Dimensions	Level	Frequency (Fi)	Percentage (%)
Health and well-being	Low	130	30.37
	Moderate	151	35.28
	High	147	34.35
	Total	428	100.00%
Physical	Low	109	25.47
	Moderate	153	35.75
	High	166	38.79
	Total	428	100.00%
Emotional	Low	150	35.05
	Moderate	146	34.11
	High	132	30.84
	Total	428	100.00%
Social	Low	129	30.14
	Moderate	154	35.98
	High	145	33.88
	Total	428	100.00%

Regarding the physical dimension, the high level prevailed in the values by obtaining the majority, which means that some teleworkers, being in total confinement, spent more time developing physical activities, eating a better diet and having better habits and health care.

The results in the emotional dimension, for the most part, were positioned at a low level, which shows that at a certain stage of the execution of teleworking, many experienced episodes of stress due to not being able to coordinate and separate the tasks of work with family life; they also presented problems of depression and anxiety, among others.

Finally, the social dimension reported mostly results located at a medium level. These results showed the difficulty that the subjects surveyed had in being able to easily relate to their employers, having been in total confinement for a long time; it has been difficult for them to adjust to the new social reality.

4.2. Inferential Results

Table 5 presents the data normality test of the study variables, where the results of significance are less than 0.05. To this end, using the ideal Kolmogorov–Smirnov statistician for samples greater than 50 elements, it is reflected that the data come from a normal distribution, so the use of a non-parametric test is essential to verify the research hypothesis; therefore, an analysis with the Ordinal Logistic Regression model is used for the inferential analysis.

Table 5. Data normality test.

	Kolmogórov-Smirnov		
	Statistical	df	p-Value
Teleworking	0.294	428	0.012
health and well-being	0.360	428	0.000

Lilliefors significance correction.

The Kolmogorov–Smirnov (K–S) statistic is used to check whether or not the data to be analyzed come from a normal distribution. The K–S test is an alternative non-parametric test, which uses the cumulative distribution to decide on the specific distribution of the data. This test is efficient for goodness-of-fit purposes. The K–S test under classical statistics is applied when all the observations in the data are determinate, precise and certain. However, in real situations, it may happen that the data cannot be represented in statistical terms or that the data are in an interval or are imprecise data [68,69], later specifying what type of hypothesis test will be used [70], where the hypotheses to be tested are:

H₀: The analyzed data follow a normal distribution.

H₁: The analyzed data do not follow a normal distribution.

Contrast statistic in Formula (1):

$$D = \sup_{1 \leq i \leq n} |F_n(X_i) - F_0(X_i)| \quad (1)$$

where:

x_i is the i -th value observed in the sample (whose values have previously been ordered from smallest to largest).

$F_n(X_i)$ is an estimator of the probability of observing values less than or equal to X_i .

$F_0(X)$ is the probability of observing values less than or equal to X_i when H_0 is true.

According to the results presented in Table 6 of the model, teleworking influences the health and well-being of Peruvian workers in times of pandemic, which is reflected in the values of Chi-Square equal to 37.232 and p -value equal to 0.000 with respect to a statistical significance of $\alpha = 0.005$. These values led to reject the null hypothesis; therefore, there is a subordination of one variable in relation to the other.

Table 6. Adjustment of the telework model in the health and well-being of Peruvian workers in times of pandemic.

Model	Model Adjustment Information			
	Model Log-Likelihood 2	Chi-Square	df	p-Value
Only intersection	47.349			
Final	0.000	37.232	2	0.000

Link function: Logit.

The results presented in Table 7 allow demonstrating the dependence between the variables by indicating a p -value of 0.978 versus $\alpha = 0.005$, meaning that the model is beneficial for the analysis.

Table 7. Goodness of Adjustment for the logistic regression model.

	Goodness of Adjustment		
	Chi-Square	df	p-Value
Pearson	13.000	4	0.978
Deviance	9.000	4	0.533

Link function: Logit.

Now, to verify whether or not there is an impact of teleworking on the health of Peruvian workers in times of pandemic, inferential statistics are used by applying the hypothesis test with the Regression of the pseudo-R-squared.

Research Hypothesis Test

H₀: *There is no impact of teleworking on the health and well-being of Peruvian workers in times of pandemic.*

H_a: *There is an impact of Teleworking on the health and well-being of Peruvian workers in times of pandemic.*

Table 8 shows the impact of teleworking on the health and well-being of Peruvian workers in times of pandemic, where the Wald result is equal to 992.185. This value is greater than the cut-off point = 4, with a significance of $p = 0.000 < \alpha = 0.05$, for which the null hypothesis is rejected due to the incidence in level 2 of health and well-being.

Table 8. Verification of the impact of Teleworking on the health and well-being of Peruvian workers in times of pandemic.

		Parameter Estimates					Confidence Interval at 95%	
		Estimate	Standard Error	Wald	df	Sig.	Lower Limit	Upper Limit
Threshold	[health and well-being = 1]	−17.312	124.42	201.541	1	0.000	−0.523	−3191.172
	[health and well-being = 2]	3.875	0.821	922.328	1	0.000	2.270	−0.473
Location	[teleworking of peruvian worker = 1]	−17.523	1932.79	729.197	1	0.000	−0.922	−5825.432
	[teleworking of peruvian worker = 2]	0.223	164.324	992.185	1	0.000	−0.835	−3895.235
	[teleworking of peruvian worker = 3]	0 ^a	.	.	0	.	.	.

Link function: Logit. ^a This parameter is set to zero because it is redundant.

At level 2, the Wald result is equal to 922.328 and the significance is equal to $p = 0.000 < \alpha = 0.05$. Therefore, the impact is observed in the telework variable with the highest percentage at the regular level; and it is reflected in the health and well-being variable by presenting a higher percentage at the moderate level for Peruvian workers in times of pandemic.

After demonstrating the impact of teleworking on the health and well-being of the aforementioned workers, the Nagelkerke coefficient was calculated, which, for linear regression models, the coefficient of determination, also known as R², is well-defined to measure the proportion of variation in the dependent variable explained by the predictors included in the model, following the law of total variance [71], that is, it estimates to what level an independent variable can explain the variance of the dependent variable. This coefficient is a transformation of the Cox and Snell R², which corrects the scale of the statistic to cover the full range from 0 to 1.

The use of R², the coefficient of determination, also called the multiple correlation coefficients, is well established in classical regression analysis [72]. Its definition is the proportion of the variance explained by the regression model and makes it useful as a

measure of the success of predicting the dependent variable from the independent variables, given in Equation (2) [73,74].

$$R^2 = 1 - \exp \left[-\frac{2}{n} \{l(\beta) - l(0)\} \right] = 1 - \{L(0)/L(\beta)\}^{2/n} \quad (2)$$

where:

$l(\beta) = \log L(\beta)$ and $l(0) = \log L(0)$ denote the log probabilities of the adjusted and null model, respectively.

According to the model presented in Table 9, the subordination of health and well-being in the teleworking of Peruvian workers in times of pandemic is visualized, where the Nagelkerke coefficient indicates that the instability of health and well-being in 42.1% for the behavior of teleworking in the aforementioned collaborators in times of pandemic.

Table 9. Pseudo R-squared regression for the research hypothesis.

Pseudo R Squared	
Cox y Snell	0.228
Nagelkerke	0.421
McFadden	0.248

Link function: Logit.

5. Discussion

From the results obtained through the hypothesis test, it was possible to establish that there is an impact of teleworking on the health and well-being of Peruvian workers in times of pandemic where the Wald result was equal to 992.185, greater than the cut-off point = 4, with a significance of $p = 0.000 < \alpha = 0.05$.

The previous statistical result leads to rejecting the null hypothesis due to the incidence in level 2 of health and well-being, which presented the following results: Wald was equal to 922.328 with significance equal to $p = 0.000 < \alpha = 0.05$, which means that there is an impact of teleworking on the health and well-being of Peruvian workers in times of pandemic; therefore, when the telecommuting dimension reaches the regular level, then the dimension of health and well-being obtains a moderate level of these Peruvian workers in times of pandemic.

Additionally, the Nagelkerke coefficient indicated that the instability of health and well-being is 42.1% due to the behavior of teleworking in Peruvian workers in times of pandemic.

These results are similar to those presented by Registre et al., which showed that teleworking in collaborators created additional demands, such as task interdependence and professional isolation, which had negative effects on teleworking performance by increasing the frequency of perceived stress. However, there was the organizational support of resources that play a mediating role towards the effect of professional isolation when performing the telework modality [53].

Similarly, these findings are in correspondence with the studies mentioned by Sutarto et al., where they indicated a prevalence of depression of 18.4%, anxiety 46.4% and stress 13.1% with relatively good productivity. Likewise, gender, age, educational level, work experiences, marital status, number of children and the nature of the organization were associated with the psychological health of the employees but not with their productivity. While the availability of the workspace influenced both results, the model showed a negative correlation between psychological well-being and employee productivity [55].

This also coincides with the derivations found by Rodríguez et al., in studies carried out in universities, which showed that the areas of pain noted during the period of confinement were less in all cases. As well as the frequency of physical activity performed, increased significantly during the period of confinement. It was also observed that the type of physical activity carried out was modified during this period, with a preference for

strength training and stretching exercises. In short, confinement generated changes in the lifestyle and musculoskeletal pain of the workers [55].

On the other hand, these results are in agreement with those of Lizana and Vega, where 78.7% of workers reported having increased their working hours during the COVID-19 pandemic due to teleworking and 86% indicated negative effects at the family level. The aforementioned allows us to conclude that the workers presented moderate scores of low quality of life, which suggests that it would be beneficial to promote a better distribution of the workload of the workers in emergency contexts [57].

Additionally, the results are similar to those of Omoredde et al., who showed that, in certain areas, the teleworking modality during the pandemic has positively influenced health and well-being, while in other areas, health and well-being have been negatively affected [58]. Similarly, there are the findings of Blahopoulou et al., whose results indicated that the collaborators have felt satisfied with this work modality, which showed positive effects on their well-being and performance [54].

Likewise, these solutions are similar to the study by Lizana et al., where the results indicated that, in each gender, there were significant differences between the pre-pandemic and pandemic times and a greater impact was observed among women, reflected in the variables of the physical and mental component of the quality of life scales. Consequently, it is considered that the perception of the quality of life of Chilean educational workers has been affected by the COVID-19 pandemic. These findings could be related to work overload due to teleworking or feelings of uncertainty, loneliness and fear that the pandemic and its associated confinement will worsen [60].

In contrast are the findings of Raišienė et al., whose results indicate that teleworking during the pandemic, had a negative impact on well-being (in the aspect of work–life balance) and health (mainly in terms of mental exhaustion) of office workers [58].

6. Conclusions

This study managed to specify the subordination of health and well-being in the teleworking of Peruvian workers in times of pandemic, pointing out the instability of health and well-being due to the behavior of teleworking in the aforementioned workers. In addition, it was shown that there is an impact of teleworking on the health and well-being of Peruvian workers in times of pandemic; therefore, when the telecommuting dimension reaches the regular level; then the dimension of health and well-being obtains a moderate level of these Peruvian workers in times of pandemic.

Similarly, it was determined that, in the teleworking variable there was a predominance of the regular level, reflecting that this modality presented weaknesses, in some cases due to improvisation quickly in the coordination for the execution of the work, among other aspects. Likewise, the regular level was maintained in all dimensions of the teleworking; therefore, in the technical support dimension, deficiencies were found in the use of the necessary resources to normally execute work due to internet connection failures, little knowledge on new platforms for communication and lack of adequate equipment.

On the other hand, in the workload dimension, it was found that, during the pandemic, the collaborators perceived a greater amount of workload and little ability to disconnect, affecting the hours and workday that they must develop, while in the knowledge of the activities of the work, there were no problems, only in the learning of new fundamental applications for communication.

Regarding the task performance dimension, it reflected that, despite being doing work from home, they had to make arrangements over time to develop the activities of the home and care for the family; however, there were no weaknesses in goal achievement, organization and feedback.

In relation to the status dimension of the work environment, the findings indicate that when executing the work in confinement, there must be greater communication, monitoring of the work and integration and improvement of the work environment; in this way, it will improve the relationships between the collaborators and the work environment to carry

out the work. Although it is true, the teleworking modality was not always carried out in the workers' homes, this was only carried out during the period of confinement due to the health emergency; however, before the pandemic, teleworking was carried out in the offices of each organization. Due to the aforementioned, it is necessary that the worker in this new scenario can manage in the best way to carry out their activities and at the same time that an ideal environment prevails among their colleagues and superiors.

On the other hand, in the variable health and well-being of Peruvian workers in times of pandemic, the moderate level prevailed, showing that some of the respondents suffered the attacks of the pandemic virus and other ailments associated with it. In relation to the dimensions of this variable, the physical and social dimensions reached a moderate level, while the emotional dimension reached a low level.

In the physical dimension, it was assumed that some teleworkers, being in total confinement, spent more time developing physical activities, eating a better diet and having better habits and health care, having greater disease prevention.

In contrast, in the emotional dimension, a low level prevailed, specifying that, at a certain stage of the execution of teleworking, they experienced episodes of stress due to not being able to coordinate and separate work tasks from family life. Equally, they also presented problems of depression and anxiety, among others, all of which affected their autonomy, personal growth and self-acceptance.

Finally, in the social dimension, the difficulty that the respondents had in being able to relate to their employers was evident since, having been in total confinement for a long time, it has been difficult for them to adjust to the new social reality, whereby there were difficulties in creating ties and interacting with people.

The findings found in this study, from an academic point of view, contribute to the generation of relevant knowledge based on solving the problems that are generated in the teleworking modality, being able to open new lines of research with edges such as: computer visual syndrome, problems of ergonomics, stress, work environment and job satisfaction, as impacts of teleworking.

From a practical perspective, the findings of this study allow us to improve the implications that this type of work has on the conditions where the work of the employees is carried out. In the same way, they lead to the visualization of certain labor conflicts that could affect motivation, the work environment and the ability of workers to relate to their colleagues and superiors, among other aspects. At the same time, teleworking can socially favor the progress of geographical areas with a depressed economy.

From the political point of view, this study and its findings contribute to setting a precedent to generate policies in which progress and development of this work modality continue, taking into account the most suitable conditions to carry out the work. Likewise, to create interprovincial and/or transnational projects those benefit the economy.

Among the main limitations of the study, it was found that due to the context or scenario of quarantine confinement, in which it was carried out, there was little literature related to the subject, in addition to the presence of unverified or scientifically invalid information during the pandemic.

Based on the results achieved in this study, it is recommended that organizations include working from home within their organizational culture, for the importance of the health and well-being of all those involved in teleworking tasks, differentiating the physical, emotional and social dimensions. In the same way, the above must be worked on as a whole, since they are implicit in achieving a good quality of life. On the other hand, it is suggested to train your collaborators; referring to the new technologies that are being produced in a world so changing.

Author Contributions: Conceptualization, R.C.D.M. and E.d.C.A.C.; methodology, E.d.C.A.C.; software, E.d.C.A.C.; validation, J.M.S.S., H.E.L.G. and R.C.D.M.; formal analysis, R.C.D.M.; investigation, R.C.D.M.; resources, E.d.C.A.C.; data curation, E.d.C.A.C.; writing—original draft preparation, R.C.D.M.; writing—review and editing, E.d.C.A.C.; visualization, J.M.S.S.; supervision, H.E.L.G.; project administration, R.C.D.M.; funding acquisition, R.C.D.M. All authors have read and agreed to the published version of the manuscript.

Funding: The research work was financed by the School of Industrial Engineering, Universidad Privada del Norte, Lima 15306, Perú.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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