

PERCEPTIONS OF PORTUGUESE HEALTHCARE PROFESSIONALS ON THE 4-DAY WORKWEEK: AN EXPLORATORY CROSS-SECTIONAL STUDY

Perceções de profissionais de saúde portugueses sobre a semana de 4 dias: estudo transversal exploratório

Percepciones de profesionales de la salud portuguesas sobre la semana de 4 días: un estudio transversal exploratorio

Manuel Ferreira Veloso*, Carlos Cabral-Cardoso**

ABSTRACT

Background: the COVID-19 pandemic and burnout have worsened the human resources crisis in healthcare, leading professionals to exit the sector. The 4-day Workweek emerges as a potential solution to mitigate this problem, though there is little information on its application in healthcare. **Objectives:** to understand healthcare workers' views on this initiative, assessing its impact on the sector's functioning and professionals' lives. **Methodology:** exploratory cross-sectional study with a voluntary and consented questionnaire and a convenience sample of 2004 healthcare workers. Analysis was conducted using the Kolmogorov-Smirnov and Kruskal-Wallis tests ($p < 0.05$). **Results:** the model is perceived as positive in reducing absenteeism, increasing productivity and job satisfaction. Expected benefits include better work quality and concentration, greater job stability and professional fulfilment. Despite challenges such as additional workload and multitasking, the model appears beneficial for retaining professionals and balancing personal and work life. Respondents expect more leisure time and reject negative impacts on family, health, and well-being. Options involving a 4-day workweek with salary cuts appear to be rejected. Given the methodological limitations, these results should be interpreted with caution. **Conclusion:** healthcare workers view this initiative positively and support its implementation, without wage reduction.

Keywords: health services administration, personnel management, health personnel, work schedule

*MSc., Unidade Local de Saúde de Santo António, Porto, Portugal – <https://orcid.org/0009-0009-2958-4015>
**PhD., Universidade do Porto, Portugal – <https://orcid.org/0000-0002-3509-3126>

Corresponding Author:
Manuel Ferreira Veloso
velosomaf@gmail.com

How to cite:

Veloso, M. F., & Cabral-Cardoso, C. (2025). Perceptions of portuguese healthcare professionals on the 4-day workweek: an exploratory cross-sectional study. *Revista de Investigação & Inovação em Saúde*, 8(1), 1-16. <https://doi.org/10.37914/riis.v8i1.459>

Received: 20/02/2025
Accepted: 23/09/2025

RESUMO

Enquadramento: a pandemia da COVID-19 e o *burnout* agravaram a crise de recursos humanos na saúde, resultando na saída de profissionais. A Semana de 4 Dias surge como possível solução para mitigar este problema, embora haja pouca informação sobre sua aplicação no setor.

Objetivos: compreender a posição de profissionais de saúde sobre esta iniciativa, avaliando o seu impacto no funcionamento do setor e vida dos profissionais. **Metodologia:** estudo transversal exploratório com questionário voluntário e consentido, aplicado a amostra de conveniência de 2004 profissionais de saúde. Análise realizada usando os testes de Kolmogorov-Smirnov e Kruskal-Wallis ($p < 0,05$). **Resultados:** o modelo parece positivo para reduzir o absentismo, aumentar a produtividade e a satisfação no trabalho. Esperadas melhorias na qualidade e concentração no trabalho, estabilidade laboral e realização profissional. Apesar de desafios como carga de trabalho adicional e *multitasking*, o modelo parece benéfico para reter profissionais e equilibrar a vida pessoal e o trabalho. Espera-se mais tempo para lazer e rejeitam-se impactos negativos na família, saúde e bem-estar. As modalidades com cortes salariais parecem ser rejeitadas. Dadas as limitações metodológicas, estes resultados devem ser interpretados com cautela. **Conclusão:** os profissionais avaliam a iniciativa de forma positiva e apoiam a sua implementação, sem perda remuneratória.

Palavras-chave: administração de serviços de saúde, gestão de recursos humanos, pessoal de saúde, horário de trabalho

RESUMEN

Marco contextual: la pandemia de COVID-19 y el burnout han agravado la crisis de recursos humanos en sanidad, provocando la salida de profesionales. La Semana de 4 Días surge como posible solución para mitigar este problema, aunque existe poca información sobre su aplicación en el sector. **Objetivos:** comprender la posición de los profesionales sanitarios sobre esta iniciativa, evaluando su impacto en el funcionamiento del sector y vida de los profesionales.

Metodología: estudio transversal exploratorio con cuestionario voluntario y consentido y una muestra de 2004 profesionales sanitarios. Análisis se realizó utilizando las pruebas de Kolmogorov-Smirnov y Kruskal-Wallis ($p < 0,05$). **Resultados:** el modelo parece positivo para reducir el absentismo, aumentar la productividad y la satisfacción laboral. Se esperan mejoras en la calidad del trabajo, mayor estabilidad y realización profesional. A pesar de desafíos como mayor carga de trabajo y multitasking, el modelo parece beneficioso para retener profesionales y equilibrar la vida laboral y personal. Se espera más tiempo libre y se descartan efectos negativos en la familia, salud y bienestar. Las modalidades con recortes salariales parecen ser rechazadas. Dadas las limitaciones metodológicas, estos resultados deben interpretarse con cautela. **Conclusión:** los profesionales valoran positivamente esta iniciativa y apoyan su implementación, sin pérdida de salario.

Palabras clave: administración de los servicios de salud, administración de personal, personal de salud, plan de trabajo

INTRODUCTION

The workday duration and the organization of work schedules have been subjects of debate in academic literature and organizational management for many decades. However, this debate has gained renewed momentum in recent years, focusing on the so-called '4-day week' (4DW) (Hamermesh & Biddle, 2025), with the healthcare sector being no exception (Hayakawa et al., 2025). The reasons for this growing interest in the 4DW are manifold, notably the increased importance attributed by younger generations to leisure and work-life balance (Afshari et al., 2023), and greater attention paid to well-being, including health and mental health, aspects that are significantly influenced by work schedules and to which the 4DW can make an important contribution (Hayakawa et al., 2025). Time and the organization of work schedules (working hours, duration, and shift rotation) are central factors in determining the levels of well-being of healthcare professionals (HCPs) across various dimensions: psychological (satisfaction and purpose); physical (physical and mental health); and social (relationships) (Xiao et al., 2022). Issues of well-being are primarily a concern for the professionals involved but are also an increasing concern for management (Cohen et al., 2023), considering the available empirical evidence, which consistently confirms the importance of work schedules to the well-being of HCPs, and the well-being to performance and the quality of services provided (Dall'Ora et al., 2023).

In other words, improving the quality of services provided requires revisiting the issue of work schedules, seeking to understand to what extent more flexible forms and new modalities of work organization, such as the 4DW, can make a significant contribution to

these objectives, even considering the added challenges that the implementation of the 4DW may face in the healthcare sector, given the sector's specificities arising from continuous activity and shift work (Araújo et al., 2025). Beyond the effects on well-being, the 4DW can play an important role in the attraction and retention of professionals, a critical factor for the proper functioning of healthcare services and a challenge they face worldwide (Lock & Carrieri, 2022). A recent study (Llaurado-Serra et al., 2025) concluded that more than 20% of nursing professionals in various European countries are considering leaving their jobs within the next three years, a ratio that in some cases can reach 50%. Portugal was not included in this study, but the difficulties in attracting and retaining HCPs are public knowledge, reported daily in the media. The difficulties in retaining HCPs are not a new problem, but they have worsened considerably with the pandemic, representing a significant challenge for the sector (Aiken et al., 2024). In this context, the study of the implementation of new forms of work organization, such as the 4DW, takes on relevance in the healthcare sector. The implementation of the 4DW is a complex task, not without difficulties, much of which has already been identified in the pilot study of the 4DW conducted in Portugal (Gomes & Fontinha, 2024), and whose success depends on multiple factors, not least the levels of acceptance of the individuals involved (Campbell, 2024; Jahal & Bardoel, 2024).

Studies on the change and implementation of human resource management (HRM) policies suggest that their effectiveness depends on how they are perceived by the workers who experience and interpret them, and on the intentions they attribute to management (Hewett et al., 2018). Understanding workers'

perceptions is therefore essential to identify what can influence their openness, or resistance, to these changes (Erwin & Garman, 2010). Added to this is the importance of context, consistently identified as relevant when seeking to understand work relations and how individuals experience their daily work, which recommends some caution in generalizing the results available in the international literature to different social realities, such as the Portuguese one (Cabral-Cardoso & Santos, 2025). In short, despite the contributions already available in the literature on the 4DW, studies in the healthcare sector are relatively scarce, and studies focused on cultural contexts such as the Portuguese one are even rarer, which recommends an exploratory approach to the study of HCPs' perceptions on the 4DW.

Therefore, it is important to understand, in the Portuguese context, what the receptivity and acceptance of the 4DW is among HCPs, which constitutes the central objective of this research. The study aims to explore the perspective of HCPs on the implementation of the 4DW and the perception of its impact on the sector and on personal and professional life. The main research questions include the acceptance of the model, the factors that influence the receptivity and acceptance of this work model (such as the importance attributed to free time, flexibility, and well-being), and the possible effects on the organization of healthcare services. The specific objectives include: (i) comparing perspectives according to profession; and (ii) evaluating the positive and negative impacts of this policy on healthcare services.

BACKGROUND

The reduction of working time is an old discussion in management, with the 4DW being one of the alternatives to achieve this reduction (Hamermesh & Biddle, 2025). In Portugal, the 5-day week only became common practice after April 25th 1974, but in the literature the interest in the 4DW dates back to the 1970s, when it acquired some expression in various sectors and attracted the attention of researchers, particularly in the U.S. context (Fottler, 1977; Goodale & Aagaard, 1975; Ivancevich & Lyon, 1977). In the following decades, interest in this topic waned considerably, having been revived with great vigour after the pandemic (Campbell, 2024; Jahal & Bardoel, 2024). Contributing to this greater receptivity to the 4DW in recent years was the increased appreciation of leisure and free time allowed by the longer weekend (Afshari et al., 2023; Chung, 2022; Hamermesh & Biddle, 2025; Veal, 2023), and the problematization of the culture of 'long working hours' traditional in some societies, with the stereotype of the 'ideal worker' described as someone who prioritizes work above all else and remains in the workplace beyond their working hours (Chung, 2022). Added to this are growing concerns about sustainability issues, and the potential contribution of the 4DW to the reduction of costs and emissions resulting from fewer commutes to work (Araújo et al., 2025; Yildizhan et al., 2023).

From the start, the topic of the 4DW has always been surrounded by great controversy (Calvasina & Boxx, 1975; Fottler, 1977; Ronen & Primps, 1981), mainly associated with the different motivations underlying its implementation, the diversity of 4DW modalities, and the inconsistent results obtained in empirical studies conducted on its effects on employees and employers

(der Landwehr et al., 2025; Jahal & Bardoel, 2024), which contributed to a heated debate heavily influenced by preconceived positions and pressure from interest groups, and fuelled by studies often conducted with little methodological rigour (Campbell, 2024). Also contributing to this controversy were the different meanings of the expression 4DW, that is, the multiple modalities that the 4DW can adopt: fixed or flexible schedule; with or without reduction of weekly hours; with or without salary reduction; and with or without worker consultation and participation in the choice of the adopted format and the day off (Jahal & Bardoel, 2024). In their review, der Landwehr et al. (2025) identify eleven different modalities of the 4DW. The 'compressed week' modality (4 working days, with no reduction of weekly hours) was the first to gain some expression and support in the business environment, and later in the U.S. public sector, with the expression '4DW' frequently used in the literature with this meaning, that is, reducing working days without necessarily implying a reduction of working hours (Afshari et al., 2023; Bird, 2010; Ronen & Primps, 1981), or only with a slight reduction of weekly hours, e.g., to 38 hours per week (Goodale & Aagaard, 1975). In the European context, the 'compressed week' modality has not aroused so much enthusiasm, despite its potential contribution to the financial results of companies (Dutordoir & Struyfs, 2024). On this side of the Atlantic, the 4DW is usually interpreted as implying a 'reduction of weekly hours' (Araújo et al., 2025), an association resulting from the '35h weekly work schedule' implemented in France at the beginning of the century (Estevão & Sá, 2008; Fagnani & Letablier, 2004; Hayden, 2006). Sometimes, the 4DW is even used to designate working time 'equivalent to 4 days' (approx. 32h), without necessarily implying that the

work activity is carried out in 4 days (Chung, 2022), which illustrates the complexity and ambiguity associated with the concept of the 4DW.

Considering the diversity of 4DW modalities, it is not surprising that the levels of acceptance among the individuals involved, and the results obtained in the study of their effects are inconsistent. The most studied modality - the 'compressed week' - has always encountered very disparate levels of acceptance among employees and often contradictory results and/or results that vary over time (Allen & Hawes, 1979; Arbon et al., 2012; Bird, 2010; Campbell, 2024; Fottler, 1977; Goodale & Aagaard, 1975; Nord & Costigan, 1973; Ronen & Primps, 1981; Wadsworth & Facer, 2016). In the other modalities, different results and levels of acceptance are also apparent among the individuals involved (Campbell, 2024; Jahal & Bardoel, 2024), in addition to the effects resulting from the different circumstances, motivations, and interests involved (Venczel, 2024) and the strategies developed to adapt to this new work schedule (Moen & Chu, 2024; Pedersen et al., 2024).

Regarding the effects produced by the 4DW, and despite the limited consistency of the results obtained it is, nevertheless, possible to conclude that these are generally positive, in terms of individual performance and productivity, physical and psychological well-being, work-life relationships, equal opportunities, and in career progression, without compromising the organization's results (Afshari et al., 2023; Araújo et al., 2025; Calvasina & Boxx, 1975; der Landwehr et al., 2025; Hayakawa et al., 2025; Yildizhan et al., 2023; Jahal & Bardoel, 2024; Jain et al., 2025; Lepinteur, 2019; Wadsworth & Facer, 2016). The pilot study on the implementation of the 4DW conducted in Portugal concluded that workers evaluated positively the

experience, having reported a reduction in levels of stress and pressure at work, and improvements in mental health and work-life balance (Gomes & Fontinha, 2024). However, the literature shows that studies on this matter tend to favour the evaluation of short-term effects (Hayakawa et al., 2025), an important aspect considering the evidence that suggests that the levels of acceptance and the positive effects tend to dilute over time (Campbell, 2024), especially when the implementation of the 4DW did not involve workers or is associated with increased levels of monitoring and control (Arbon et al., 2012; Delaney & Casey, 2022), or intensification of work (Kelliher & Anderson, 2010).

The effects of the 4DW are also highly context-dependent, resulting in different levels of acceptance and adherence, and very different effects produced, depending on the cultural context and sector of activity (Araújo et al., 2025; Hamermesh & Biddle, 2025). The specificities of the social and healthcare sector, namely those arising from continuous activity and shift work present additional challenges for the implementation of the 4DW (Araújo et al., 2025), even though it is a sector where long shifts and the compressed workweek are well-established practices with a long-standing tradition (Hamermesh & Biddle, 2025; Munyon et al., 2023).

Despite all the cautions that careful reading of the literature recommends, it is possible to state that the 4DW as a flexible and alternative work model has the potential to mitigate some of the negative effects of long working hours and irregular shifts, common in the healthcare sector (Lu et al., 2023; Querstret et al., 2020). The high propensity of HCPs to present high levels of stress and burnout is known in the literature (Hofmann, 2018; Schneider et al., 2022), and some

studies indicate that reducing working hours can have a positive effect on reducing occupational stress, with a consequent decrease in symptoms of cumulative fatigue (Barck-Holst et al., 2021; Lu et al., 2023), a condition that can negatively affect the safety and quality of services provided (Sagherian et al., 2017). However, although the available empirical evidence is consensual regarding the harmful effects of long working hours, it does not seem to exist a clear answer about what would be the ideal number of working hours that would potentiate the highest levels of mental health (Kamerādea et al., 2019).

In the healthcare sector, management concerns with the well-being of professionals are increasing (Cohen et al., 2023), and there is evidence of the positive effects of the 4DW on health and well-being of professionals, contributing to mitigating problems of stress and burnout (Hayakawa et al., 2025; Moloney et al., 2018), closely associated with the organization of working hours and shift work (Dall'Ora et al., 2023). A meta-analysis by Salyers et al. (2017) concluded that there is a consistent negative relationship between the burnout condition of HCPs and the quality and safety of services provided (including patient satisfaction). These problems, not being new, were exacerbated by the COVID-19 pandemic, reinforcing the need to find innovative solutions to promote the well-being of HCPs and ensure safe, effective, patient-centred, timely, efficient, and equitable care (García-Iglesias et al., 2020). The pilot study of the 4DW in Portugal also points in this direction, finding significant increases in the self-assessment of mental and physical health, an average increase of 11 minutes in sleep time, and a decrease in symptoms of exhaustion and negative mental health symptoms among the workers in 4DW who participated in the pilot study (Gomes & Fontinha,

2024). These results underline the need to explore flexible work models that allow reducing pressure on HCPs and promoting their well-being.

The positive effects of organization and working hours flexibility on the satisfaction of HCPs have already been reported in the literature (Atkinson & Hall, 2011). In addition to the increased time for rest and recovery, the 4DW allows for a greater balance between professional and personal life, which is crucial for the well-being of HCPs, enabling them to dedicate more time to family, leisure, and self-care (Fagnani & Letablier, 2004; Hayakawa et al., 2025), matters that have gained great acuity and are increasingly valued by professionals.

Another factor that helps to understand the growing interest in the 4DW is its potential contribution to the effectiveness of recruitment and retention policies (Jahal & Bardoel, 2024), a topic of increasing importance in HRM and particularly relevant in the healthcare sector (Afshari et al., 2023; Lock & Carrieri, 2022). In the Portuguese pilot study on the 4DW, most workers subject to the 4DW model stated that they would only consider switching to a job with a 5-day week if they were paid 20% more than they currently earn (Gomes & Fontinha, 2024, p. 12), which suggests the value attributed by participants to the 4DW and the potential positive effects that this model can have on their retention. The Job Demands–Resources theory (Bakker et al., 2023) offers a useful framework for interpreting these findings.

The 4DW may represent a significant personal resource, by enabling individuals to devote more time to their personal lives, facilitating recovery from occupational stress and psychological detachment, and reducing the risk of burnout - an especially relevant issue among HCPs. On the other hand, regarded as an

important personal resource that allows greater control over work, the 4DW can have motivational effects and contribute to greater retention, given the loss of this benefit resulting from leaving the organization.

In sum, despite the scarcity of studies on the 4DW in the Portuguese context, and in the healthcare sector in particular, and the inconsistency of results available in the international literature, the advantages and potential contributions of this work time arrangement for the health and well-being and retention of HCPs seem clear. It is therefore reasonable to expect that these positive effects will be reflected in the quality of services provided. However, it is crucial that the implementation of the 4DW is properly prepared and monitored, considering the specific challenges of the sector and the needs of professionals and patients. This study aims to contribute to a better understanding of the healthcare professionals' perception and receptiveness to the 4WD, a key factor in effectively planning and implementing this work-time arrangement as part of health policies that promote both professional well-being and quality of care.

METHODOLOGY

This observational, exploratory, and cross-sectional study used a self-completion questionnaire. The population consists of adult individuals, professionals from any area of activity in the health sector, using a convenience sample of HCPs in Portugal, from public units (Local Health Units, Primary Healthcare Units, and hospitals) and private units (hospitals, clinics, and pharmacies). The sample comprised 2004 respondents with the category of HCPs. No individual was excluded, as everyone met the defined characteristics.

The questionnaire was made available via Google Forms® for completion from 1st June 2024 to 31st July 2024, and was distributed online by associations of healthcare professionals, professional bodies, and institutional mailing lists. No procedures were established to prevent duplicates or to ensure the veracity of the responses. The questionnaire included closed questions and was structured in several parts: the first, with information about the study and purposes, where the respondent gave their consent to participate in the study; the second, with questions seeking to characterize the sample; and the third, to collect the views of the respondents in relation to the Working Time Reduction and the 4DW, and its effect/impact on services in the healthcare sector and on their lives, both personally and professionally.

For sample characterization, demographic data were collected, such as age, gender, marital status, and nationality, region of the country where they are professionally active, and professional characteristics - such as profession, area of specialty, whether doctor or nurse, number of years of practice, type of care provided, type of health unit where they work, sector, type of employment contract, and number of weekly hours contracted.

The parameters whose influence and impact of the 4DW are to be assessed, through the perspectives of HCPs were impact on the sector, namely changes in employability, productivity, work intensity, workload and volume, work environment, job satisfaction and professional fulfilment, professional exhaustion, inequalities between professionals, absenteeism, changes to how services function, and to their quality and effectiveness; effects on work-life balance, satisfaction with personal life, well-being, physical and mental health, work-family balance, allocation of free

time and leisure preferences, information about leisure activities, satisfaction with personal financial situation, environmental and societal impact, in addition to other personal and family characteristics.

A Likert scale (from 1, strongly disagree to 5, strongly agree) was used, given the easy completion and intuitive analysis. Care was also taken to formulate statements in a way that would prevent unreflective completion and a bias toward uniform responses.

Completion was voluntary and anonymous, with measures to protect the identification of the respondents, namely: age collected in 5-year age band; nationality as Portuguese or other; in marital status, the exact situation is not asked, with responses grouped as 'married or in a de facto union' and 'single, widowed, or divorced'; rather than the specific medical specialty, the broader area of specialization is questioned: "medical", "surgical", or "medical-surgical" surveyed. Prior to its administration, the questionnaire was piloted with a group of professionals to verify its suitability for the intended purpose.

Data were analysed with SPSS® software (version 25), adopting a significance level of 0.05. Categorical variables were described by absolute and relative frequencies and continuous variables by means and standard deviations. The normality of the variables was tested using the Kolmogorov-Smirnov Test, which indicated the need to use a non-parametric test (Kruskal-Wallis Test) for comparisons between more than two professional groups.

The protocol was submitted to the Ethics Committee of the Faculty of Medicine of the University of Porto (257/CEFMUP/2024), and a positive report was issued, ensuring compliance with the principles of the Declaration of Helsinki.

RESULTS

The sample was composed of 2004 participants (Table 1), predominantly women (81.7%), aged between 25 and 44 years (58.1%), mostly married or living in a de facto union (61.3%), and with higher education (89.3% graduated or with master's degree). Geographically, the majority is in the Norte (50.6%) or Lisboa e Vale do

Tejo (33.0%) regions. Most work in the public sector (79.5%), with a significant representation in hospitals (51.4%) and primary healthcare units (45.4%). About 38.5% were doctors, 35.2% nurses and 26.3% other professionals. Only 3.5% of HCPs had previous experience with the 4DW in the healthcare sector.

Table 1

Sample characteristics (n=2004)

Variables	n	%	Variables	n	%
Age			Geographic Area of Practice		
19 to 24 years	15	0,7	Alentejo	20	1,0
25 to 29 years	326	16,3	Algarve	33	1,6
30 to 34 years	268	13,4	Centro	229	11,4
35 to 39 years	240	12,0	Lisboa e Vale do Tejo	661	33,0
40 to 44 years	323	16,1	Norte	1015	50,6
45 to 49 years	243	12,1	Autonomous Region of Madeira	35	1,7
50 to 54 years	252	12,6	Autonomous Region of Açores	11	0,5
55 to 59 years	182	9,1	Type of Health Unit of Practice		
60 to 64 years	126	6,3	Clinic	56	2,8
65 to 69 years	25	1,2	Primary Healthcare Units	910	45,4
70 years or more	4	0,2	Pharmacy	7	0,3
Gender			Hospital Unit	1031	51,4
Male	364	18,2	Profession		
Female	1637	81,7	Hospital Administrator	6	0,3
Prefer not to say	3	0,1	Administrative Assistant	7	0,3
Nationality			Operational Assistant	38	1,9
Portuguese	1985	99,1	Social Worker	15	0,7
Other	19	0,9	Technical Assistant	64	3,2
Marital Status			Nurse	706	35,2
Married or in union	1228	61,3	Pharmacist	15	0,7
Single, divorced, or widowed	766	38,2	Medical Doctor	771	38,5
Prefer not to say	10	0,5	Medical Dentist	30	1,5
Educational Level			Nutritionist	30	1,5
Basic education	15	0,7	Psychologist	30	1,5
Secondary education	147	7,3	Clinical Secretary	123	6,1
Bachelor's degree	837	41,8	DTST	169	8,4
Master's degree	951	47,5	Previous 4DW Experience	70	3,5
Doctorate	54	2,7			
Sector of Employment			Variables	Mean	SD
Public	1594	79,5	Duration of employment (years)	17,2	11,6
Private	69	3,4	Contracted weekly working hours	36,7	4,2
Both	341	17,0			

SD – Standard Deviation; n – Absolute frequency; % - Relative frequency; DTST - Diagnosis and Therapeutics Superior Technician

Regarding work performance and job satisfaction (Table 2), HCPs appear to perceive the impact of 4DW positively, particularly in terms of reduced absenteeism and increased productivity. In relation to organizational

performance, access, and the quality of healthcare services, there seems to be a general expectation of enhanced work quality and increased professional concentration. As for working conditions, stress

reduction is viewed positively, and a decrease in job satisfaction is generally rejected. The model may also be seen as beneficial for professional retention.

Table 2

Opinions of healthcare professionals regarding job performance and satisfaction

Indicators	$\bar{x}$	σ	Me	Mo	P75	P25
Absenteeism decrease	4,282	0,957	5,000	5	5,000	4,000
Productivity increase	4,426	0,850	5,000	5	5,000	4,000
Organizational productivity decrease	1,871	1,097	2,000	1	2,000	1,000
Organizational costs increase	2,141	1,150	2,000	1	3,000	1,000
Work quality improvement	4,393	0,884	5,000	5	5,000	4,000
Job efficiency decrease	1,709	1,010	1,000	1	2,000	1,000
Professionals' concentration level increase	4,377	0,925	5,000	5	5,000	4,000
Healthcare error number increase	1,626	0,985	1,000	1	2,000	1,000
Stress level decrease	4,254	1,073	5,000	5	5,000	4,000
Professional satisfaction reduction	1,591	0,919	1,000	1	2,000	1,000
Retention level decrease	1,955	1,113	2,000	1	3,000	1,000

$\bar{x}$ - mean; σ - standard deviation; Me - median; Mo - mode; P75 - 75th percentile; P25 - 25th percentile

There seems to be broad support for the expansion of time allocated to personal life (Table 3). No reduction is anticipated in time devoted to family, well-being, and health. There also seems to be a shared belief in the increase of time available for social life and leisure. The

HCPs expect significant improvements in overall health, happiness, and a reduction in the incidence of depression. The possibility of increased burnout seems to be dismissed.

Table 3

Opinions of healthcare professionals regarding personal time, well-being, and health

Indicators	$\bar{x}$	σ	Me	Mo	P75	P25
Well-being decrease	1,590	0,947	1,000	1	2,000	1,000
Work and personal life time-management improvement	4,658	0,730	5,000	5	5,000	5,000
Life quality decrease	1,703	1,175	1,000	1	2,000	1,000
Time available for friends increase	4,672	0,651	5,000	5	5,000	4,000
Family time decrease	1,569	1,151	1,000	1	2,000	1,000
Leisure time increase	4,704	0,608	5,000	5	5,000	5,000
Health and welfare time decrease	1,474	0,978	1,000	1	2,000	1,000
Overall health increase	4,667	0,668	5,000	5	5,000	4,500
Regular physical activities practice decrease	1,488	0,830	1,000	1	2,000	1,000
Professionals' happiness increase	4,555	0,741	5,000	5	5,000	4,000
Depression incidence decrease	4,226	1,010	5,000	5	5,000	4,000
Burnout incidence increase	1,616	0,974	1,000	1	2,000	1,000

$\bar{x}$ - mean; σ - standard deviation; Me - median; Mo - mode; P75 - 75th percentile; P25 - 25th percentile

Regarding the different 4DW models (Table 4), options that do not involve salary reduction are positively evaluated.

Table 4

Opinions of healthcare professionals regarding 4-day week models

Indicators	$\bar{x}$	σ	Me	Mo	P75	P25
Current weekly hours distributed across 4 days, without payment decrease	4,294	1,167	5,000	5	5,000	4,000
Current weekly hours distributed across 4 days, with payment decrease	1,209	0,653	1,000	1	1,000	1,000
Decreased weekly hours distributed across 4 days, without payment decrease	3,834	1,460	5,000	5	5,000	3,000
Decreased weekly hours distributed across 4 days, with payment decrease	1,635	1,115	1,000	1	2,000	1,000

$\bar{x}$ - mean; σ - standard deviation; Me - median; Mo - mode; P75 - 75th percentile; P25 - 25th percentile

Furthermore, the influence of the profession on the statistically significant correlations presented in Table impact of the 4DW was also analysed, with only 5.

Table 5

Influence of profession on perception of the 4-day week

Variable	Hospital Administrators (Me)	Technical Assistants (Me)	Nurses (Me)	Pharmacists (Me)	Medical Doctors (Me)	Medical Dentists (Me)	Clinical Secretaries (Me)	DTST (Me)	H	P
Healthcare professionals' absenteeism decrease	4,500	5,000	5,000	4,000	4,000	4,000	5,000	5,000	27,248	<0,001
Healthcare professionals' productivity Increase	4,000	5,000	5,000	4,000	5,000	5,000	5,000	5,000	21,969	0,003
Healthcare professionals' quality of life improvement	4,000	5,000	5,000	4,000	5,000	5,000	5,000	5,000	15,101	0,035
Increasing accessibility to healthcare services	3,000	4,000	3,000	3,000	3,000	3,500	3,000	3,000	37,378	<0,001
Decreasing time waiting for a first consult	3,000	4,000	3,000	3,000	3,000	3,000	3,000	3,000	63,181	<0,001
Increasing multitasking need	2,500	3,000	3,000	3,000	3,000	4,000	3,000	3,000	36,703	<0,001
Work satisfaction decrease	2,000	2,000	1,000	1,000	1,000	1,000	2,000	1,000	73,957	<0,001
Healthcare professionals' retention decrease	1,500	3,000	2,000	2,000	1,000	1,000	2,000	2,000	87,233	<0,001
Work and personal life time-management improvement	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	15,906	0,026
Current weekly hours distributed across 4 days, without payment decrease	5,000	5,000	5,000	5,000	4,000	5,000	5,000	5,000	162,444	<0,001
Decreased weekly hours distributed across 4 days, without payment decrease	1,000	5,000	4,000	3,000	5,000	4,000	5,000	4,000	25,605	0,001
Decreased weekly hours distributed across 4 days, with payment decrease	1,000	1,000	1,000	1,000	1,000	1,500	1,000	1,000	91,905	<0,001

DTST, Diagnostic and Therapeutic Superior Technicians; H, Kruskal-Wallis' H

Most professions view the 4DW as beneficial for productivity and work quality, although Hospital Administrators and Pharmacists are more cautious. Technical Assistants are the most confident that the 4DW will improve access to healthcare services and reduce waiting times for first appointments, with other HCPs having a more moderate position on this matter.

Medical Dentists report a greater need for multitasking. All professional groups are sceptical about the potential negative impact of 4DW on job satisfaction and staff retention and seem to believe in its effect on reducing absenteeism, with slight variation among Physicians, Dentists, and Hospital Administrators. Most agree that the 4DW will help balance work and personal life.

DISCUSSION

The analysis suggests that HCPs appear to share the expectation that 4DW will lead to reduced absenteeism and have a positive effect on productivity, efficiency, and job satisfaction. These findings are consistent with those reported in the literature (Campbell, 2024; Topp et al., 2022) and with the results of the Portuguese pilot project, which indicated that productivity gains stemmed from maintaining output with fewer working hours and no layoffs (Gomes & Fontinha, 2024). However, the analysis also indicates that there are some differences in perception among the various professional groups, which may be explained by the context of the Portuguese National Health Service (PNHS), where 96.5% of respondents work. Professionals with more rigid schedules tend to view 4DW as an opportunity to achieve better work-life balance. Nurses, given their demanding workloads, also tend to see 4DW as beneficial. In contrast, Hospital Administrators and Pharmacists, concerned with resource management and service continuity, appear to exhibit more scepticism. The shortage of human resources and long waiting lists may reinforce the perception that the 4DW could be unfeasible or compromise the delivery of care.

These findings should be interpreted with caution. It is important to note that the sample used was one of convenience, which limits the representativeness of the results. Furthermore, the use of a self-report questionnaire on a topic with positive connotations may have introduced social desirability bias, potentially inflating the favourable responses and leading to an overestimation of the validity of the results. Recent contextual factors, such as the COVID-19 pandemic and the 2024 structural reform of the PNHS, may have

produced similar effects. Therefore, further studies are recommended, using more representative samples and methods that minimize these biases, to gain a more accurate understanding of the effects of 4DW.

In terms of costs, the findings of this study diverge from the conclusions of Hayden (2006), who linked reduced working time to a loss of competitiveness due to increased costs, and from Askenazy (2013), who observed a rise in unit labor costs. However, the Portuguese pilot project did not identify a significant increase in costs, nor did it demonstrate direct financial gains from the 4DW (Gomes & Fontinha, 2024).

Moreover, the culture of resource maximization within the PNHS may reinforce the belief that 4DW will not compromise organizational efficiency. The PNHS' prior experience in adapting to structural challenges may also contribute to confidence in the implementation of the 4DW without detrimental effects on productivity and competitiveness. Finally, the rejection of the hypothesis of increased costs may be associated with the expectation that reduced absenteeism and turnover will bring long-term financial benefits. On this basis, it is crucial to recognize that statistical correlations, while indicative of relevant associations, do not necessarily imply practical effects of significant magnitude. Once again, caution in data extrapolation is essential to avoid excessive generalizations.

Regarding work quality and professional focus, the perceptions gathered align with the findings of Barck-Holst et al. (2021), who reported improvements in quality associated with reduced working time. The perspective on work quality and concentration may also provide a foundation for developing theoretical models that explore the relationship between time management, the well-being of HCPs and clinical performance - reinforcing the importance of

integrating psychological and organizational dimensions in the implementation of HRM policies and in defining work schedules. This study may thus represent an initial, albeit exploratory, analysis suggesting that implementing 4DW could enhance professional focus and the quality of care provided, potentially contributing to the redefinition of efficiency standards and personal growth in clinically demanding environments.

Perceptions of the impact of 4WD on personal time and well-being suggest that HCPs believe that 4WD may allow for greater physical and mental recovery, improving the levels of well-being and quality of life of professionals and their work-life balance. These findings are in line with previous studies that highlight the value attributed to 4WD due to its anticipated positive impact on family and social relationships and a better work-life balance (Gomes & Fontinha, 2024; Hayakawa et al., 2025; Jahal & Bardoel, 2024).

The results also suggest the potential attractiveness of the model to professionals, with positive effects on retention, in line with findings from other studies (Afshari et al., 2023) and the Portuguese pilot project, which reported an increase in recruitment in nearly half of the participating companies and a 30% reduction in turnover (Gomes & Fontinha, 2024).

Finally, the redistribution of weekly working hours without salary reduction appears to be positively received, while options involving salary cuts tend to be rejected, supporting the notion that the acceptance of 4WD largely depends on the specific model adopted (Campbell, 2024). Physicians seem less convinced, and Hospital Administrators tend to view reduced hours without loss of pay negatively, due to financial concerns and the sustainability of the PNHS. Financial stability and the recognition of work appear to be key

factors underlying this rejection. Moreover, maintaining salary levels may be seen as a strategy for retaining talent in a sector already marked by workforce shortages. Administrators, in turn, weigh the operational challenges and budgetary impact of implementing 4WD. They may also express reservations aligned with resistance to change and perceptions of the structural difficulties within the PNHS, as well as concerns about workforce management and workload pressures in the PNHS. Once again, it is important to highlight the limitations of directly applying these findings to broader or different contexts, such as the private sector, other institutional settings, other geographic regions, or underrepresented professions, particularly those outside the PNHS (public sector professionals make up 79.5% of the sample) and outside the North and Lisbon and Tagus Valley regions (83.6%), where 4WD is slightly more valued. It is also crucial to recognize that the observed correlations, while indicative of relevant associations, do not necessarily imply practical effects of significant magnitude. Caution in extrapolating the data is therefore essential to avoid overgeneralization. The study offers potential contributions to the literature on 4WD in the healthcare sector. This is the first study to assess the views of HCPs in Portugal on this model, based on a highly diverse sample of healthcare professions, though it remains an exploratory study with methodological limitations. The topic of 4WD is particularly relevant in the post-pandemic context, where burnout and workforce shortages appear to be critical concerns. The practical implications are significant, especially regarding the management of motivation, productivity, and professionals' quality of life. The findings may therefore inform more robust studies, future pilot

initiatives, and controlled trials aligned with organizational reform plans.

On the other hand, the study presents some limitations that should be acknowledged, in addition to those already mentioned. A non-validated questionnaire was used, due to the lack of a recognized instrument in this field, and the studies included in the literature review are heterogeneous, involving different populations and variables. Furthermore, the questions addressed 4WD in a generic way, without distinguishing between its various modalities (with or without reduced working time, and with or without salary reduction), which may have influenced the responses. In addition, most participants (92%) hold higher qualifications, which may lead to an underestimation of the potential benefits of 4WD.

These limitations, together with the use of a convenience sample, geographic overrepresentation, and social desirability bias - already discussed - underscore the need to interpret the results with caution.

This research thus represents an important starting point in this field, as it highlights the views of the HCPs who are best positioned to identify both internal and general shortcomings in this specific area - issues that must be taken into account. These kinds of questions pave the way for a more in-depth analysis of the topic and raise important considerations about the future evolution of healthcare services.

CONCLUSION

Overall, the 4WD may be viewed by HCPs as a promising approach to improving the work environment, increasing productivity, and reducing absenteeism, without compromising service quality or

raising costs. In addition to potentially contributing to job stability and professional well-being, the 4WD may help reduce stress and improve mental health. HCPs seem to prefer a modality without salary reduction, rejecting alternatives that involve pay cuts. It should be emphasized, however, that these results are merely indicative of the perceptions of a non-representative sample to whom a non-validated questionnaire was administered.

The implementation of 4WD seems to require particular attention to critical dimensions such as the management of the workload, the need for planning, and the challenges of effective operationalization, which may vary depending on professional roles, types of care provided, and whether the context is public or private. Hospital administrators seem to express greater scepticism, raising concerns about the long-term viability of 4WD. In sum, 4WD could be promising provided it is implemented carefully, potentially contributing to mitigate the professionals' turnover and to improve system performance - perhaps allowing for a greater and more comprehensive response in the provision of care and to the sector's growing challenges. However, the exploratory nature of the study and its methodological limitations constrain the generalizability of these findings and conclusions, which, if interpreted without caution, may significantly overstate what the empirical evidence can support.

The study suggests significant implications for HRM policies, service planning, and training contents, even if still at a preliminary and exploratory stage, to be validated through more robust and rigorous future research.

Although the objectives defined for this study have been achieved, it is considered essential to conduct further research, namely pilot interventions,

qualitative studies, and controlled trials that, based on the application of the model, incorporate the views of HCPs or new populations, compare the public and private sectors, as well as various professions and institutional contexts, and examine the impact on the quality of care provided, the costs, the benefits, the impact on the quality of care provided, and the care delivery indicators.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

REFERENCES

- Afshari, F. S., Guajardo, L., Kramer, J. M., Musawi, A., Venugopalan, S. R., & Sykes-Smith, A. (2023). Compressed 4-day workweek for dental faculty retention and recruitment. *Journal of Dental Education*, 87(8), 1108–1112. <https://doi.org/10.1002/jdd.13234>
- Aiken, L. H., Sermeus, W., McKee, M., Lasater, K. B., Sloane, D., Pogue, C. A., Kohnen, D., Dello, S., Maier, C. B. B., Drennan, J., & McHugh, M. D. (2024). Physician and nurse well-being, patient safety and recommendations for interventions: cross-sectional survey in hospitals in six European countries. *BMJ Open*, 14, e079931. <https://doi.org/10.1136/bmjopen-2023-079931>
- Allen, R. E., & Hawes, D. K. (1979). Attitudes toward work, leisure and the four day workweek. *Human Resource Management*, 18(1), 5–10. <https://doi.org/10.1002/hrm.3930180103>
- Araújo, A., Rodrigues, A. C., & Ferreira, M. R. (2025). Exploring the impact of a four-day workweek on sustainable people management: a systematic review of the literature. *Journal of Organizational Effectiveness: People and Performance*, 12(4), 1113–1131. <https://doi.org/10.1108/JOEPP-08-2024-0372>
- Arbon, C. A., Facer, R. L., & Wadsworth, L. L. (2012). Compressed workweeks - strategies for successful implementation. *Public Personnel Management*, 41(3), 389–405. <https://doi.org/10.1177/009102601204100301>
- Askenazy, P. (2013). Working time regulation in France from 1996 to 2012. *Cambridge Journal of Economics*, 37(2), 323–347. <https://doi.org/10.1093/cje/bes084>
- Atkinson, C., & Hall, L. (2011). Flexible working and happiness in the NHS. *Employee Relations*, 33(2), 88–105. <https://doi.org/10.1108/01425451111096659>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands-resources theory: ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, 10, 25–53. <https://doi.org/10.1146/annurev-orgpsych-120920-053933>
- Barck-Holst, P., Nilsson, Å., Åkerstedt, T., & Hellgren, C. (2021). Coping with stressful situations in social work before and after reduced working hours, a mixed-methods study. *European Journal of Social Work*, 24(1), 94–108. <https://doi.org/10.1080/13691457.2019.1656171>
- Bird, R. C. (2010). Four-day work week: old lessons, new questions. *Connecticut Law Review*, 42(4), 1059–1080. https://digitalcommons.lib.uconn.edu/law_rev/66
- Cabral-Cardoso, C., & Santos, R. S. (2025). The person behind the mask: supervisor-subordinate relationships and well-being at work. *Management Research*, 23(3), 283–314. <https://doi.org/10.1108/MRJIAM-11-2023-1480>
- Calvasina, E. J., & W. R. Boxx. (1975). Efficiency of workers on the 4-day work week. *Academy of Management Journal*, 18(3), 604–610. <https://doi.org/10.5465/255689>
- Campbell, T. T. (2024). The four-day work week: a chronological, systematic review of the academic literature. *Management Review Quarterly*, 74(3), 1791–1807. <https://doi.org/10.1007/s11301-023-00347-3>
- Chung, H. (2022). A social policy case for a four-day week. *Journal of Social Policy*, 51(3), 551–566. <https://doi.org/10.1017/S0047279422000186>
- Cohen, C., Pignata, S., Bezak, E., Tie, M., & Childs, J. (2023). Workplace interventions to improve wellbeing and reduce burnout for nurses, physicians and allied healthcare professionals: a systematic review. *BMJ Open*, 13, e071203. <https://doi.org/10.1136/bmjopen-2022-071203>
- Dall’Ora, C., Ejebu, O. Z., Jones, J., & Griffiths, P. (2023). Nursing 12-hour shifts and patient incidents in mental health and community hospitals: a longitudinal study using routinely collected data. *Journal of Nursing Management*, 6626585. <https://doi.org/10.1155/2023/6626585>
- Delaney, H., & Casey, C. (2022). The promise of a four-day week? A critical appraisal of a management-led initiative. *Employee Relations: The International*

- Journal*, 44(1), 176–190. <https://doi.org/10.1108/ER-02-2021-0056>
- Dutordoir, M., & Struyfs, K. (2024). The impact of a compressed workweek on shareholder value: an event study analysis of Belgium's 4-day workweek legislation. *Human Resource Management*, 63(6), 903–917. <https://doi.org/10.1002/hrm.22238>
- Erwin, D. G., & Garman, A. N. (2010). Resistance to organizational change: linking research and practice. *Leadership & Organization Development Journal*, 31(1), 39–56. <https://doi.org/10.1108/01437731011010371>
- Estevão, M., & Sá, F. (2008). The 35-hour workweek in France: straightjacket or welfare improvement? *Economic Policy*, 23(55), 418–463. <https://doi.org/10.1111/j.1468-0327.2008.00204.x>
- Fagnani, J., & Letablier, M. T. (2004). Work and family life balance: the impact of the 35-hour laws in France. *Work, Employment and Society*, 18(3), 551–572. <https://doi.org/10.1177/0950017004045550>
- Fottler, M.D. (1977). Employee acceptance of a 4-day work week. *Academy of Management Journal*, 20(4), 656–668. <https://doi.org/10.5465/255364>
- García-Iglesias, J. J., Gómez-Salgado, J., Martín-Pereira, J., Fagundo-Rivera, J., Ayuso-Murillo, D., Martínez-Riera, J. R. & Ruiz-Frutos, C. (2020). Impacto del SARS-CoV-2 (Covid-19) en la salud mental de los profesionales sanitarios: una revisión sistemática. *Revista Española de Salud Pública*, 94, e202007088. <https://ojs.sanidad.gob.es/index.php/resp/article/view/888>
- Goodale, J. G., & Aagaard, A. K. (1975). Factors relating to varying reactions to the 4-day workweek. *Journal of Applied Psychology*, 60(1), 33–38. <https://doi.org/10.1037/h0076345>
- Gomes, P., & Fontinha, R. (2024). *Relatório final do projeto-piloto da semana de quatro dias*. Ministério do Trabalho Solidariedade e Segurança Social/Instituto do Emprego e Formação Profissional. https://www.iefp.pt/documents/10181/11729755/Relatorio+Final+S4D_PT_V21.pdf/abc242e9-1a8f-4593-ab47-7ca8f655fe8d
- Hamermesh, D. S., & Biddle, J. E. (2025). Days of work over a half century: the rise of the four-day workweek. *ILR Review*, 78(1), 37–61. <https://doi.org/10.1177/00197939231209965>
- Hayakawa, J., Patterson, M., Sandhu, E., & Schomberg, J. (2025). Reimagining work-life balance: the impact of a 4-day workweek on healthcare leader burnout and well-being. *Worldviews on Evidence-Based Nursing*, 22(2), e70010. <https://doi.org/10.1111/wvn.70010>
- Hayden, A. (2006). France's 35-hour week: attack on business? Win-win reform? Or betrayal of disadvantaged workers?. *Politics & Society*, 34(4), 503–542. <https://doi.org/10.1177/0032329206293645>
- Hewett, R., Shantz, A., Mundy, J., & Alfes, K. (2018). Attribution theories in human resource management research: a review and research agenda. *International Journal of Human Resource Management*, 29(1), 87–126. <https://doi.org/10.1080/09585192.2017.1380062>
- Hofmann, P. B. (2018). Stress among healthcare professionals calls out for attention. *Journal of Healthcare Management*, 63(5), 294–297. <https://doi.org/10.1097/JHM-D-18-00137>
- Ivancevich, J. M., & Lyon, H. L. (1977). The shortened workweek: a field experiment. *Journal of Applied Psychology*, 62(1), 34–37. <https://doi.org/10.1037/0021-9010.62.1.34>
- Jahal, T., & Bardoel, E. A. (2024). Could the 4-day week work? A scoping review. *Asia Pacific Journal of Human Resources*, 62(1), e12395. <https://doi.org/10.1111/1744-7941.12395>
- Jain, M. J., Chouliara, N., & Blake, H. (2025). From five to four: examining employee perspectives towards the four-day workweek. *Administrative Sciences*, 15(3), 114. <https://doi.org/10.3390/admsci15030114>
- der Landwehr, M. A., Topp, J., & Neumann, M. (2025). When less is more: a systematic review of four-day workweek conceptualizations and their effects on organizational performance. *arXiv, Computer Science (Software Engineering)*, 2507.09911. <https://doi.org/10.48550/arXiv.2507.09911>
- Kamerādea, D., Wang, S., Burchell, B., Balderson, S. U., & Coutts, A. (2019). A shorter working week for everyone: how much paid work is needed for mental health and well-being? *Social Science & Medicine*, 241, 112353. <https://doi.org/10.1016/j.socscimed.2019.06.006>
- Kelliher, C., & Anderson, D. (2010). Doing more with less? Flexible working practices and the intensification of work. *Human Relations*, 63(1), 83–106. <https://doi.org/10.1177/0018726709349199>
- Llaurado-Serra, M., Santos, E. C., Grogues, M. P., Constantinescu-Dobra, A., Coțiu, M. A., Dobrowolska, B., Friganović, A., Gutysz-Wojnicka, A., Hadjibalassi, M., Ozga, D., Režić, S., Sabou, A., Slijepčević, J., & Georgiou, E. (2025). Critical care nurses' intention to leave and related factors: survey results from 5

- European countries. *Intensive and Critical Care Nursing*, 88, 103998. <https://doi.org/10.1016/j.iccn.2025.103998>
- Lepinteur, A. (2019). The shorter workweek and worker wellbeing: evidence from Portugal and France. *Labour Economics*, 58, 204-220. <https://doi.org/10.1016/j.labeco.2018.05.010>
- Lock, F. K., & Carrieri, D. (2022). Factors affecting the UK junior doctor workforce retention crisis: an integrative review. *BMJ Open*, 12(3), e059397. <https://doi.org/10.1136/bmjopen-2021-059397>
- Lu, Y., Li, Z., Chen, Q., Fan, Y., Wang, J., Ye, Y., Chen, Y., Zhong, T., Wang, L., Xiao, Y., Zhang, D., & Yu, X. (2023). Association of working hours and cumulative fatigue among Chinese primary health care professionals. *Frontiers in Public Health*, 11, 1193942. <https://doi.org/10.3389/fpubh.2023.1193942>
- Moloney, W., Boxall, P., Parsons, M., & Cheung, G. (2018). Factors predicting Registered Nurses' intentions to leave their organization and profession: a job demands-resources framework. *Journal of Advanced Nursing*, 74(4), 864-875. <https://doi.org/10.1111/jan.13497>
- Moen, P., & Chu, Y. (2024). Time work in the office and shop: workers' strategic adaptations to the 4-day week. *Work and Occupations*, 51(4), 607-633. <https://doi.org/10.1177/07308884231203317>
- Munyon, T. P., LeClaire, C., Pace, L., & Boldin, T. (2023). What makes a compressed workweek successful?. *Organizational Dynamics*, 52(2), 100982. <https://doi.org/10.1016/j.orgdyn.2023.100982>
- Nord, W. R., & Costigan, R. (1973). Worker adjustment to the four-day week: a longitudinal study. *Journal of Applied Psychology*, 58(1), 60-66. <https://doi.org/10.1037/h0035419>
- Pedersen, M., Muhr, S. L., & Dunne, S. (2024). The care of the self and the meaningful four-day workweek. *Philosophy of Management*, 23, 335-352. <https://doi.org/10.1007/s40926-024-00314-2>
- Querstret, D., O'Brien, K., Skene, D. J., & Maben, J. (2020). Improving fatigue risk management in healthcare: a scoping review of sleep-related/ fatigue-management interventions for nurses and midwives (reprint). *International Journal of Nursing Studies*, 112, 103745. <https://doi.org/10.1016/j.ijnurstu.2020.103745>
- Ronen S., & Primps, S. B. (1981). The compressed work week as organizational change: behavioral and attitudinal outcomes. *Academy of Management Review*, 6(1), 61-74. <https://doi.org/10.5465/amr.1981.4288003>
- Sagherian, K., Clinton, M. E., Huijter, H.A.S., & Geiger-Brown, J. (2017). Fatigue, Work Schedules, and Perceived Performance in Bedside Care Nurses. *Workplace Health & Safety*, 65(7), 304-312. <https://doi.org/10.1177/2165079916665398>
- Salyers, M. P., Bonfils, K. A., Luther, L., Firmin, R. L., White, D. A. Adams, E. L., & Rollins A. L. (2017). The relationship between professional burnout and quality and safety in healthcare: a meta-analysis. *Journal of General Internal Medicine*, 32, 475-482. <https://doi.org/10.1007/s11606-016-3886-9>
- Schneider, J., Talamonti, D., Gibson, B., & Forshaw, M. (2022). Factors mediating the psychological well-being of healthcare workers responding to global pandemics: a systematic review. *Journal of Health Psychology*, 27(8), 1875-1896. <https://doi.org/10.1177/13591053211012759>
- Topp, J., Hille, J. H., Neumann, M., & Mötefindt, D. (2022). *How a 4-day work week and remote work affect agile software development teams*. Hochschule Hannover.
- Veal, A. J. (2023). The 4-day work-week: the new leisure society? *Leisure Studies*, 42(2), 172-187. <https://doi.org/10.1080/02614367.2022.2094997>
- Venczel, T. (2024). Illuminating shades: a qualitative analysis of the impact of a four-day workweek on subjective well-being in Hungary. *Employee Responsibilities and Rights Journal*. <https://doi.org/10.1007/s10672-024-09504-6>
- Wadsworth, L. L., & Facer, R. L. (2016). Work-family balance and alternative work schedules: exploring the impact of 4-day workweeks on state employees. *Public Personnel Management*, 45(4), 382-404. <https://doi.org/10.1177/0091026016678856>
- Xiao, Q., Cooke, F. L., & Chen, L. (2022). Nurses' well-being and implications for human resource management: a systematic literature review. *International Journal of Management Reviews*, 24(4), 599-624. <https://doi.org/10.1111/ijmr.12295>
- Yildizhan, H., Hosouli, S., Yilmaz, S. E., Gomes, J. Pandey, C., & Alkharusi, T. (2023). Alternative work arrangements: individual, organizational and environmental outcomes. *Heliyon*, 9(11), e21899. <https://doi.org/10.1016/j.heliyon.2023.e21899>