



Saúde Mental e Perdas de Produtividade: Avaliação e Impacto do Stress

Pós-Traumático

Ricardo Manuel Ribeiro da Silva

Dissertação de Mestrado em Psicologia da Saúde e Neuropsicologia

Orientação: Professor Doutor José Carlos Rocha

Gandra, setembro de 2019



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sob orientação do

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Declaração de Integridade

Eu, Ricardo Manuel Ribeiro da Silva, estudante do Mestrado em Psicologia da Saúde e Neuropsicologia do Instituto Universitário de Ciências da Saúde, declaro ter atuado com absoluta integridade na elaboração desta Dissertação de Mestrado.

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Resumo

O Work Productivity and Activity Impairment Questionnaire – General Health (WPAI-GH) foi criado visando a uma avaliação quantitativa relatada pelo trabalhador de absentismo, presentismo, perda total de produtividade e atividades de tempos livres, relacionada à Saúde em geral. Várias versões deste questionário, foram criadas para problemas de saúde específicos, porém, ainda não existia uma versão específica voltada para os efeitos de produtividade nos problemas de saúde mental. Assim, a primeira parte deste estudo é dedicada ao desenvolvimento de uma versão do WPAI, para saúde mental, Work Productivity and Activity Impairment Questionnaire – Mental Health (WPAI-MH). Já a Segunda parte, pretende explorar melhor os efeitos da Perturbação de Stress Pós-Traumático (PTSD) na produtividade dos trabalhadores e calcular os custos financeiros estimados derivados dessa condição.

O protocolo foi aplicado a 386 trabalhadores, onde 75 dos indivíduos com PTSD e 167 sem PTSD, sendo que no total das duas investigações utilizaram-se: a IES-6, WPAI-GH e MH, COPSOQ e ICG, consentimento informado e questionário sociodemográfico.

Deste modo, a versão final do WPAI-MH apresenta validade convergente, estatisticamente significativa. Dando origem um questionário para avaliar o comprometimento causado na Produtividade dos indivíduos, devido a questões/problemas relacionados aos trabalhadores Saúde mental. Além disso, com o segundo estudo, conclui-se que existe um impacto muito elevado da PTSD na produtividade dos indivíduos. Portanto, verificou-se que existe uma grande relação entre a perda de produtividade e a PTSD, e quanto maiores os sintomas, maior o comprometimento. Além disso, ao comparar indivíduos com e sem PTSD, observa-se que aqueles que tem PTSD apresentam maior perda total de produtividade.

Além disso, estima-se uma perda de cerca de mil milhões de euros por ano, mais do que os indivíduos sem PTSD.

Palavras-Chaves: WPAI-GH, WPAI-MH. Produtividade, PTSD.

Abstract

The Work Productivity and Activity Impairment Questionnaire - General Health (WPAI-GH) was created with a view to a quantitative assessment reported by the worker of absenteeism, presence, total loss of productivity and leisure activities, related to Health in general. Several versions of this questionnaire were created for specific health problems, however, there was not yet a specific version focused on the effects of productivity in mental health problems. Thus, the first part of this study is dedicated to the development of a version of the WPAI for mental health, Work Productivity and Activity Impairment Questionnaire - Mental Health (WPAI-MH). The second part aims to better explore the effects of Post-traumatic Stress Disorder (PTSD) on workers' productivity and calculate the estimated financial costs derived from this condition.

The protocol was applied to 386 workers, where 75 of the individuals with PTSD and 167 without PTSD, and in the total of the two investigations were used: IES-6, WPAI-GH and MH, COPSOQ and ICG, informed consent and sociodemographic questionnaire.

Thus, the final version of the WPAI-MH has convergent and statistically significant validity. This gave rise to a questionnaire to assess the impairment caused in the productivity of individuals, due to questions/problems related to mental health workers. In addition, with the second study, it was concluded that there is a very high impact of PTSD on the productivity of individuals. Therefore, it was found that there is a great relationship between the loss of productivity and PTSD, and the greater the symptoms, the greater the impairment. In addition, when comparing individuals with and without PTSD, it is observed that those who have PTSD present greater total loss of productivity.

In addition, it is estimated a loss of about one billion euros per year, more than individuals without PTSD.

Keywords: WPAI-GH, WPAI-MH. Productivity, PTSD.

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Questionnaire to Evaluate Work Productivity and Activity Impairment due to Mental Health

Problems: WPAI-MH

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Abstract

Objective: The Work Productivity and Activity Impairment Questionnaire – General Health (WPAI-GH) was created aiming for a quantitative evaluation reported by the worker of absenteeism, presentism and disability of daily activity, related to Health in general. Several versions of this questionnaire have been created for specific health problems, however, there is still no specific version targeting mental health problems productivity effects. This study is devoted to the development of a version of WPAI, for mental health, Work Productivity and Activity Impairment Questionnaire – Mental Health (WPAI-MH).

Method: A protocol was applied to 386, consisting of the IES-6, ICG, WPAI-GH and MH, COPSOQ, informed consent and sociodemographic questionnaire.

Conclusion: The final version of the WPAI-MH presents convergent validity, statistically significant. Like this, comes into existence a questionnaire to assess the impairment caused in Productivity of individuals, due to issues/problems related to the workers Mental health. Being more sensitive than the WPAI-GH, for use in mental health context.

Keywords: WPAI-MH; WPAI-GM; Productivity.

Introduction

The classical role of Psychology, particularly with overspecialization in areas like Clinical Psychology and Work Psychology, had inhibited the cross potential to correlate typical clinical problems to frequent work productivity issues.

With this, it opened the way for it to be introduced in other areas, as is the case in the world of work, seeking an application of knowledge and psychological techniques to work relations. Thus, according to Jaques (2007), in the workplace, psychology has a role of consolidation and the objective of measuring the idiosyncrasies of each individual, seeking to put each worker in the most appropriate place, with the purpose of increasing the income/ Workers productivity.

Having the concern to understand the factors that influence the productivity of the individual and seek to suggest changes necessary to increase their income. Reinforcing this idea of Jacques (2007), that the productivity of individuals is decisively influenced by psychological factors. This leads to the emergence of criticism both by the human being treated as if it were devoid of affections, or even to instrumentalize the individual in order to increase productivity, without considering the psychological component of the individual (Codo, 2006).

Being here that mental health enters due to its symbiosis with psychology, that is, ignoring mental health in order to increase productivity, can result in the inverse, i.e. a possible decrease. Thus, Francisco Lacaz (2000), concluded that there is an urgent need to resort to the debate that focuses on the organization of the workplaces, enabling a democratic and egalitarian discussion, aiming to submit the issues related to the Competitiveness and productivity, relating them to the quality of the product, but giving priority to the defense of life and health at work.

Kirsten (2010) further mentions that while it is possible to observe a trend of global growth in health promotion at the workplace, the number of companies adopting a proactive and integrated

approach to health in the workplace remains small. It is also reported that employers approach a little more aspect related to physical risks and only more recently with psychosocial risks.

Meanwhile, north American companies are more directed towards individual health risks. They also show that there can only be sustainable improvements in the health of employees if all health-related services are integrated within a company and address psychosocial and organizational factors, as well as individual health problems. Thus, it is understood that addressing this theme becomes essential so that there may be scientific reasons that justify greater attention by society in relation to problems that occur at work, with the origin of Mental health. Most research in this area is using the broader concept of general health impact correlated with mental health variables like depression (Helmich, et al., 2018) but it has been impossible to describe the specific impact of emotional and mental health issues on work productivity, considering inexistence of instruments.

In addition, a study carried out in a Portuguese textile company revealed an urgent need for the development and implementation of intervention procedures and programs, with a view to the control of the sources of stress not only directed to individuals but also for organizations.

Thus, the main objective of this study is to adapt current WPAI versions to a specific version addressing the emotional and mental health issues at work, the Work Productivity and Activity Impairment Questionnaire – Mental Health (WPAI-MH), which is a new questionnaire to assess the harm caused in the productivity of individuals, due to workers mental health issues/problems. Secondary objectives are the descriptive analysis of WPAI-MH items, WPAI-MH and WPAI-GH results means description and comparison between genders, correlations analysis between WPAI-MH and WPAI-GH, correlations analysis between WPAI and Grief and Traumatic stress symptoms and correlations between WPAI and psychosocial factors.

Method

Participants

The sample was collected online and is composed of 386 adult workers, 126 (32.6%) males and 260 (67.4%) females. The mean age was 34.51 years old ($SD=11.13$), aged between 18 and 64 years (table 1.). Regarding age, the average is 34.51 ($SD = 11.13$), minimum is 18 years and the maximum is 64 years. Regarding working time, the answers ranged from 0 to 45 years, i.e. 0 corresponds to people who had not yet completed a year of work, since the response was requested in years. The average working time (in years) of the sample is 12.26 years ($SD = 10.64$). Concerning the marital status, 165 (42.7%) are single, 25 (6.5%) are separated or divorced and 195 (50.7%) are married/married in fact. With regard to literary qualifications (table 1) of the individuals surveyed, it was possible to verify that 3.4% ($n = 3.4$) presented less than the 6th year of schooling. About 5.2% ($n = 20$) had the 6th year of schooling or equivalent. 13.5% ($n = 52$) correspond to individuals with the 9th year or equivalent. In turn, individuals with secondary education, showed to be the most representative group, being 31.6% ($n = 122$) of the sample.

However, individuals with higher education correspond to 45.8% ($n = 177$) of the sample, being 23.3% ($n = 90$) corresponding to the individuals with a degree, 20.7% ($n = 80$) to the individuals with a master's degree and 1.8% ($n = 7$) to the individuals with a doctorate. Of the individuals surveyed, 33.4% had a leadership position. 81.3% were integrated in a team and 37.6% presented work with attendance to the public.

Instruments

Five instruments were used as well as an informed consent and a sociodemographic questionnaire.

The **Event impact scale 6 (IES-6)** consists of 6 items, distributed among the three scales already given, namely the avoiding subscale (2 items), the intrusion subscale (2 items) and the Hypervigilance subscale (2 Items). This scale is self-administered, with each item 5 levels of response of the type Lickert, where, 0= Never; 1= A Little; 2= Moderately; 3 = Many Times; 4= Extremely. Validated for the Portuguese population, there was a Cronbach alpha of 0.842, (Teixeira et al, 2013)

The **Complicated grief inventory consists (ICG)** of 19 items, of administered on a 5-point Likert Scale (0 = never; 1 = rarely; 2 = occasionally; 3 = regularly; and 4 = always), evaluates mourning symptomatology that helps discriminate the existence of complicated mourning and Non-complicated, the Cronbach α value of the scale is 0.914. The first factor is called traumatic difficulties (items 2, 9, 10, 11, 12), present a Cronbach's Alpha of 0.83. The second factor reveals separation difficulties (items 1, 4, 5, 13, 19), present a Cronbach's Alpha of 0.87. The third factor is called the dimension of Denial and Revolt (items 3, 6, 7, 8), present a Cronbach's Alpha of 0.88. The fourth factor, psychotic dimension, (items 14,15), present a Cronbach's Alpha of 0.63. Finally, the fifth factor, called the depressive dimension, composed of the remaining items present a Cronbach's Apha of 0.56. (Frade, 2010).

Copenhagen Psychosocial Questionnaire (COPSOQ-II) – Reduced Version has 3 versions, one long, one medium and one short, and the version used was the short, which contains 8 dimensions and 41 questions "aimed at self-assessment of workers or application in workplaces with fewer than 30 workers". Short and medium version include only those psychosocial

dimensions with epidemiological evidence of health relation (Silva, et al., 2011). All versions have dimensions that measure exposure indicators (psychosocial risks) and indicators of their effect (health, satisfaction and stress). The items are evaluated on a 5-point Likert scale, corresponding to: 1-never/Almost never, 2-rarely, 3-sometimes, 4-often and 5-always or 1-nothing/Almost nothing, 2-a little, 3-moderately, 4-very and 5 extremely. " And for question 29, the 5 points are: 1-Excellent, 2-very good, 3-good, 4-reasonable, 5-deficit. Cronbach's Alphas range from 0.60 and 0.90 (Silva, et al., 2011).

The Work Productivity and Activity Impairment Questionnaire - General Health V2.0 (WPAI-GH) consists of 6 different questions, which try to know if the individual is currently employed, the number of hours lost due to health problems, the number of hours lost for other reasons (holidays, national days...), the number of hours that effectively worked. And the two last questions, they ask that from 0 to 10, indicate when the health problems affected their lives, while working and in daily activities. Since 0 corresponds no effect at work and 10 health problems prevent the person from working.

It is also worth mentioning that the WPAI provides four types of punctuation: 1. Absenteeism (work time missed); 2. Presenteeism (impairment at work/reduced on-the-job effectiveness); 3. Work Productivity loss (overall work impairment/absenteeism plus presenteeism); 4. Activity Impairment. The following calculations were used to calculate these scores: Percent work time missed due to health problems (Absenteeism): $Q2/(Q2+Q4)$; Percent impairment while working due to health problems (Presenteeism): $Q5/10$; Percent overall work impairment due to health problems (Work productivity loss): $Q2/(Q2+Q4) + [(1-(Q2/(Q2+Q4))) \times (Q5/10)]$; Percent activity impairment due to health problem (Activity Impairment): $Q6/10$ (Reilly, 2019). However, in order to make it easier to organize the study "Work productivity Loss"

was categorized as "Total Loss" and "Activity Impairment" as "Free Times Activity". After authorization from the authors of WPAI general version, Reilly Associates, an adapted version of WPAI was created by our team focused on Mental health problems **Work Productivity and Activity Impairment Questionnaire – Mental Health (WPAI-MH)**. This version was built both in English and Portuguese, changing the content of the burden related condition to Mental and Emotional problems (Reilly, 2019).

Procedure

The participants had as inclusion criteria to be employed and to be over 18 years old. Data collection was carried out through two processes, at an early stage this collection was made on paper and in a second phase was collected through institutional online questionnaires platform, based on LimeSurvey application. Also, were developed direct contacts with companies and institutions inviting participation. To ensure ethical guidelines, the objective of the study was explained, as well as confidentiality and anonymity to participants through informed consent. Ethical committee approval was provided by protocol. After data collection, the analysis was performed in the statistic programs. The research protocol was reviewed by Instituto *Universitário de Ciências da Saúde* Ethical Committee, with the reference 31/CE-IUCS/2019.

Results

A descriptive analysis was made of the five questions that constitute the WPAI-MH (table 2), and it was verified that regarding the time of work that individuals considered losing, during the last seven days, due to emotional/mental problems (Q2), Corresponds to an average of 3 hours and 32 minutes ($SD= 11.80$). The time lost for any other reason, such as holidays, holidays or to participate in this study (Q3), corresponded to an average of 4 hours and 26 minutes ($SD = 12.27$)

in 7 days. Regarding the working time of the individuals during the last 7 days (Q4), it had an average of 38 hours and 80 minutes ($SD = 17.95$).

When questioned about the extent to which emotional and/or mental problems affect their productivity while working (Q5), individuals presented an average response of 2.82 ($SD=2.60$), on a scale of 0 to 10. In the question about Emotional and/or mental problems affecting the ability to perform normal daily activities unrelated to work (Q6), it was found a average of 2.95 ($SD = 2.66$). It can be verified that the individuals felt their productivity slightly more affected in daily activities, compared to the working period.

Table 3 represents a description of each domain of the two versions of the WPAI, when comparing the averages of all domains, it is verified that the average are always higher in the WPAI for Mental health, compared with the WPAI for general health, which shows a higher sensitivity of WPAI-MH, to the problems/conditions related to the problems/mental health.

The general health scale includes all types of health issues, including mental health problems. Thus, if the average is higher on the mental health scale, it means that by filling the overall health scale, most individuals do not take into account these types of problems. Which shows a higher sensitivity of WPAI-MH for such problems.

Regarding the comparison between genders, it is possible to verify that women have statistically significant higher losses, in absenteeism and total loss of WPAI-MH and in the activities of free time of WPAI-GH, compared with men.

When analyzing the correlations between WPAI, GH and MH (table 4), there are statistically significant large correlations in all domains of the two questionnaires, which shows that there is a high convergence between them.

When analyzing the correlations between the different domains of both WPAI questionnaires, GH and MH, (Table 5), it is verified that all domains of MH present superior correlations when compared with the of GH.

Analyzing more particularly, it is verified that in the case of the Complicated Grief scale (ICG) the MH correlations are higher than GH, with statistically significant correlations in all domains, except for absenteeism. Already In the case of GH, no statistically significant correlation was observed in any of the domains. Presenting a correlation of $p=.148$ ($p < .05$) for Presentism; $p = .142$ ($p < .05$), for the domain of total loss of working hours; $p =.186$ ($p < .05$), for free time Activities.

In the case of the scale of the traumatic events (IES-6) Both questionnaires of the WPAI presented statistically significant correlations, however the MH showed higher correlations compared with the GH, for all domains.

A t-test for independent samples was also performed to clarify differences between participants below and above the cut-off values for each scale, Posttraumatic stress disorder and Complicated Grief, with statistically significant differences for MH version in both groups. These results are consistent with the correlation results but using another statistical approach, categorizing scales results.

Finally, we analyzed the correlations between the different domains of the WPAI questionnaire, with the different domains of COPSOQ (Table 6), verifying that:

In the domain offensive behaviors, the GH presented more higher correlations compared with the MH, presenting statistically significant correlations in all domains except for absenteeism. While in the MH, there were no statistically significant correlations.

In the domains of Self-efficacy/Personality and Organization Work and Content, none of the scales presented statistically significant correlations.

In the Health and Wellness domain, both questionnaires presented statistically significant correlations in all domains. However, WPAI-MH always presented higher correlations.

In the domain Work-Individual Interface, it was verified that MH, presents a statistically significant correlation with the domain Free Time Activities. The GH presents a statistically significant correlation with the domains Presentism and Total loss.

In the Values at Workplace domain, both questionnaires presented statistically significant negative correlations in all domains, with the exception of absenteeism. In the presentism domain, the MH presented a negative correlation higher, compared with the GH, and the opposite occurred for the remaining domains.

There is a convergence between the correlations of both WPAI and COPSQ, with the exception of the domains, Offensive Behaviors and Work Individual Interface

In the domains, Interpersonal Relations and Leadership and Demands at Work, both questionnaires presented statistically significant correlations for all domains, except for Absenteeism. The MH presented superior correlations in all domains compared with the GH.

Discussion

There is a higher sensitivity of WPAI-MH to determine the impairment in workers productivity due to problems related to mental health. Besides that, using the GH versus the MH, individuals can under look the specific effects of emotional and mental health impacts in work. Nevertheless, there is a convergence between WPAI-GH and WPAI-MH, which reinforces the validity and sensitivity of the adaptation of MH.

Moreover, it was also perceived that WPAI-MH is significantly more sensitive to detect cases of impairment in productivity, due to Grief and Trauma compared to WPAI-GH, with particularly difference in the case of Grief symptoms that failed to be considered on GH version and with effects revealed only on the MH version.

There was a convergence between the WPAI-MH and the "Health and welfare" domain of COPSOQ, which translates a high sensitivity of this scale to detect the losses that all components of this domain cause in the worker's productivity, such as Stress the Burnout, sleeping problems and depressive symptoms. It was also stressed that it presented greater sensitivity for this domain, compared with the WPAI-GH.

It is also noteworthy, the high sensitivity of this scale to detect the presentism, the Total loss of productivity and even the loss of productivity in the free time, due to issues related to the values of the individual in the workplace; With social relations and leadership-related issues; As well as with the rhythm of work or the demands, quantitative, cognitive and emotional that the individual is exposed in his workplace. Adding once again, that in general, the WPAI-MH was more sensitive to calculate the impairment at work, due to all these factors, when compared with the WPAI-GH.

It is also possible to affirm that the WPAI-MH proved to be sensitive to evaluate the loss of productivity in the free time, due to problems related to the insecurity/job satisfaction and the conflicts work/family, although less sensitive than the WPAI-GH.

This study was carried out in order to validate a new scale to assess workers ' productivity loss due to mental health problems/issues. In order to do this, convergences had to be made, either with the original scale, which was in general health, or with other scales that evaluate mental health constructs.

Through this, it verified whether the existence of convergence with various domains of the different scales. A convergence with all WPAI-GH domains. A convergence with the scales of grief and Trauma. There was also a convergence with several domains of the questionnaire that assesses the psychosocial factors (COPSOQ).

Thus, it is possible to affirm that the Work Productivity and Activity Impairment Questionnaire – Mental Health (WPAI-MH) showed a scientifically proven convergent validity to consider a valid scale to assess the impairment caused in Productivity of individuals, due to issues/problems related to the workers Mental health.

However, it is worth mentioning the need to develop studies with a larger sample in order to obtain more accurate results.

Even though the validity of the questionnaire was proven its reliability could not be determined. As the characteristics of the questionnaire don't allow the Cronbach's Alpha to be calculated it is recommended that in the future the test-retest method is applied so that the reliability of the questionnaires can be calculated.

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Tables

Table 1*Sample characterization*

	<i>n</i>	<i>%</i>	Min	Max	<i>M</i>	<i>DP</i>
Female	260	67,4				
Male	126	32,6				
Age			18	64	34,51	11,13
Working Time *			0	45	12,26	10,64
Not married	165	42,9				
Separated / Divorced	25	6,5				
Married / Fact Union	195	50,6				
9th grade or less	85	22.1				
12th grade or equivalent	122	31,6				
Degree or Baccalaureate	90	23,3				
Master or more	87	22.5				
Chief Position	129	33,4				
Integrated Team	314	81,3				
Public service	145	37,6				

Table 2*WPAI-MH item descriptive*

		Min	Max	<i>M</i>	<i>SD</i>
Q2	<i>Hours lost due to mental health problems^b</i>	0	99	3,32 ^a	11.80
Q3	<i>Hours lost due to other reasons^b</i>	0	99	4,26 ^a	12.27
Q4	<i>Work hours^b</i>	0	99	38,80 ^a	17.95
Q5	<i>Productivity affected by mental health problems during work^b</i>	0	10	2,82	2.60
Q6	<i>Daily activities affected by mental health problems^b</i>	0	10	2,95	2.66

^b In the last 7 days.^a In hours.**Table 3***Description total and gender WPAI GH and MH. T-test for differences between*

WPAI		Total		Women		Men		<i>t</i>	<i>p</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
MH	Presentism	28.24	26,00	29.78	26.70	24.94	24.28	1.42	.157
	Absenteeism	6.88	18,38	8.62	20.70	3.32	11.67	2.72	.007**
	Total loss	31.38	28,06	33.73	29.06	28.49	25.32	2.04	.043*
	Free Times Activity	29.47	26,60	31.12	26.96	26.14	25.71	1.44	.151
GH	Presentism	17.36	25,74	19.29	27.02	13.77	22.86	1.88	.062
	Absenteeism	5.60	18,16	6.06	19.36	4.77	15.81	.567	.571
	Total loss	19.22	27,74	20.82	28.91	16.28	25.34	1.32	.189
	Free time Activity	25.12	23,06	27.50	23.72	20.58	21.14	2.58	.011*

** $p < .01$ * $p < .05$

Table 4*Correlations between WPAI-MH and WPAI-GH*

	Presentism GH	Absenteeism GH	Total Loss GH	Free Time GH
Presentism MH	.582**	.311**	.553**	.560**
Absenteeism MH	.439**	.745**	.521**	.350**
Total Loss MH	.619**	.469**	.644**	.581**
Free Time MH	.504**	.232**	.486**	.562**

** p< .01 *p< .05

Table 5*Correlations between WPAI with Grief and Traumatic stress symptoms.*

		ICG Total	IES-6 Total
WPAI-MH	Presentism	.148*	.407**
	Absenteeism	.094	.179**
	Total loss	.142*	.401**
	Free Times	.186**	.445**
WPAI-GH	Presentism	.050	.274**
	Absenteeism	.015	.158*
	Total loss	.014	.263**
	Free time	.057	.387**

** p< .01 *p< .05

Table 6*Correlations between WPAI and COPSOQ*

WPAI		COPSOQ					
		Offensive Behaviors	Health / Wellness	Values at workplace	Work individual Interface	Interpersonal Relations and leadership	Demands at work
MH	Presentism	.128	.471**	-.196**	.121	-.247**	-.247**
	Absenteeism	.052	.314**	-.050	.056	-.032	-.032
	Total loss	.126	.485**	-.168*	.116	-.221**	-.221**
	Free Times	.127	.467**	-.141*	.148*	-.209**	-.209**
GH	Presentism	.190**	.429**	-.143*	.156**	-.204**	-.204**
	Absenteeism	.081	.231**	-.128	.073	-.103	-.103
	Total loss	.192**	.419**	-.185**	.161**	-.217**	-.217**
	Free time	.195**	.456**	-.155**	.114	-.186**	-.186**

Effects of Posttraumatic Stress Disorder in Work Productivity: The Cost of Trauma

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Abstract

Objective: Mental health, is an area that raises more and more interest within the world of work, however, there are few studies developed in this area. Thus, this study seeks to better explore the effects of Stress-Post traumatic disorder (PTSD) on the productivity of workers and make an estimate of the financial loss, of that condition.

Method: A protocol was applied to 386 workers, where 75 of the individuals have PTSD and 167 do not consisting of the IES-6, WPAI-GH and MH, informed consent and sociodemographic questionnaire.

Conclusion: Having concluded that there is a very high impact of PTSD on the productivity of individuals. Therefore, it was found that there is a great relationship between the loss of productivity and the PTSD, and the higher the symptoms of PTSD, the higher the impairment. Moreover, when comparing individuals with and without PTSD, it is observed that those with PTSD have a greater total loss of productivity. In addition, there is an estimated loss of around 1 billion euros.

Keywords: PTSD, Productivity, WPAI-MH.

Introduction

The productivity of a worker is an extremely influential factor of the gains/losses of a company. This leads to an enormous need to understand in detail all the factors related to this strand. However, there is a high deficit in the number of articles addressing the impact of mental health on workers ' productivity, believing that mental health has a very high impact on productivity, the need to develop this study emerged.

Thus, Lim, Sanderson & Andrews (2001), analyzed a sample of 10641 full-time workers, identified by the Australian National Survey of Mental Health and Well-Being, verifying that depression, generalized anxiety disorder and Personality disorders Show to be predictive of work impairment, which leads to a decrease in productivity.

As Lerner et al., (2004) concluded through a study comparing 246 individuals with depression with a control group of 143 individuals. That the average of individuals with dysthymia had a higher productivity loss compared to the control group. They also reported that the severity of depression was a decisive factor in decreasing productivity. Still within this analysis, Sanderson & Andrews (2006), through the analysis of seven longitudinal studies, with a mean sample of 6264 individuals, concluded that depression and simple phobia were the most prevalent disorders in the working population, however, the Depression and anxiety, were more consistently associated with loss of productivity in work than absenteeism. Among the pure and comorbid disorders, the comorbid anxiety-affective disorders were associated with a greater amount of work impairment.

What goes in a way to meet what Kessler & Frank (1997), verified stating that the work impairment is more strongly affected with comorbid psychiatric disorders than with pure disorders. The latter authors also report that the effects of psychiatric disorders on job loss are similar in all occupations.

While the effects on labor reduction are higher among professional workers than in other occupations. Lerner et al., (2004) Verified that certain occupations also significantly increased the vulnerability of employees to loss of productivity, and this loss occurred when employees had professions that demanded proficiency in Decision-making and communication and/or frequent contact with the customer. However, the data of these studies contradict, in part, the conclusions of Lim, Sanderson & Andrews (2001), who did not find any evidence between the type of occupation and the impact of different types of disorder in the commitment of the work.

Not having obtained stronger associations for the reduction of work, than for the loss of work, for all disorders, they also verified that the loss or reduction of work is associated with the demand for treatment, without distinction between the different disorders. The authors concluded that a substantial amount of productivity lost due to mental disorders comes from within the full-time active population. Since mental disorders have a more significant impact on the reduction of work compared to the loss of work.

The reduction of work provides a more sensitive measure for the commitment of work in people with mental disorders. Given that work impairment is one of the adverse consequences of psychiatric disorders (Kessler & Frank, 1997). A study by Hilton, Scuffham, Vecchio & Whiteford (2010), developed in Australia and New Zealand that involved 60556 full-time employees, revealed that a total of 9.6% of employees appeared to have moderate psychological distress and other 4.5% revealed a high psychological distress, and the increase in psychic distress from low to moderate and then to high levels is associated with high decreases in productivity for employees in current treatment. However, there are no specific results on the impairment of Traumatic Stress on work environment and loss of productivity.

Thus, this study complements the scarcity of results that relate mental health with worker productivity. Like this, according to the ICD-11 (WHO, 2018), “Post Traumatic Stress Disorder is a disorder that may develop following exposure to an extremely threatening or horrific events or sequences of events characterized by: 1) Re-experiencing the traumatic event or events in the present in the form of vivid intrusive memories, flashbacks or nightmares, which are typically accompanied by strong or overwhelming emotions such as fear, horror and other strong physical sensations, or feelings of being overwhelmed or emerged in the same emotions that are experienced during the traumatic event; 2) Avoidance of thoughts and memories of the event or events, or avoidance of activities, situations, or people reminiscent the event or events; 3) Persistent perceptions of heightened current threat, for example as indicated by hypervigilance or an enhanced startle reaction to stimuli such as unexpected noises.”

The symptoms persist for at least several weeks and cause significant impairment in personal, family, social, educational, occupational or other important areas of functioning.

Few studies systematically compare the relationship between reduced productivity at work and mental disorders through population surveys (Lim, Sanderson & Andrews, 2000). Taking into account that in most studies the financial component of productivity is given more relevance.

However, according to Snyder & Lopez (2002), mental illness has a major influence on productivity, whether in the workplace, in the family meal or in the community. Productivity is reduced due to mental illness, but involves high costs due to wages, medical costs and disability claims. The authors also mention that mental problems are very close to heart disease as a burden to society. Considering that this study was carried out at Oxford University, thus referring to the population of the United Kingdom.

Through the analysis of 374.799 workers from six large American companies, it was possible to verify that absences or disabilities correspond to 29% of total expenditures related to health and productivity for physical health conditions and 47% for all mental health conditions. The most expensive mental disorders were: bipolar disorder, chronic maintenance; depression; depressive episode in bipolar disorder; neurotic, personality and non-psycotic disorders; alcoholism; anxiety disorders; schizophrenia; bipolar disorders; severe mania; neurotic, personality and non-psycotic disorders; and psychoses. (Goetzel, Hawkins, Ozminkowski, Wang, 2003). In Australia, in 2009, mental health problems are estimated to lead to a loss of \$5.9 billion in productivity for Australian employees per year (Hilton, Scuffham, Vecchio & Whiteford, 2010).

Considering the words of Kohn, Saxena, Levav & Saraceno (2004), in the United States, absenteeism and loss of productivity at work, as a result of affective disorders, cost the country 23 billion dollars per year.

Hilton, Scuffham, Vecchio & Whiteford (2010) also found that the estimated monetary loss in employee productivity due to mental health problems is substantially higher than the estimates prior to this year. This data is especially relevant, due to the global economic crisis that very possibly will lead, according to the authors, to an increase in psychological suffering among employees. This could further increase the financial loss.

They also point out that the effective treatment of mental health problems generates substantial increases in employee productivity, which shows that an economic investment in this area would most likely be solid for employers, as it could help to decrease this profitability.

Like this, the objective of this investigation is to assess the impact of Posttraumatic Stress Disorder (PTSD) in work productivity and make an estimate of the financial loss of that condition.

Method

Participants

The sample was collected online and is composed of 386 adult workers, 126 (32.6%) males and 260 (67.4%) females. The mean age was 34.51 years old ($SD=11.13$), aged between 18 and 64 years (table 1.). Regarding age, the average is 34.51 ($SD = 11.13$), minimum is 18 years and the maximum is 64 years. Regarding working time, the answers ranged from 0 to 45 years, i.e. 0 corresponds to people who had not yet completed a year of work, since the response was requested in years. The average working time (in years) of the sample is 12.26 years ($SD = 10.64$). Concerning the marital status, 165 (42.7%) are single, 25 (6.5%) are separated or divorced and 195 (50.7%) are married/married in fact. With regard to literary qualifications (table 1) of the individuals surveyed, it was possible to verify that 3.4% ($n = 3.4$) presented less than the 6th year of schooling. About 5.2% ($n = 20$) had the 6th year of schooling or equivalent. 13.5% ($n = 52$) correspond to individuals with the 9th year or equivalent. In turn, individuals with secondary education, showed to be the most representative group, being 31.6% ($n = 122$) of the sample. However, individuals with higher education correspond to 45.8% ($n = 177$) of the sample, being 23.3% ($n = 90$) corresponding to the individuals with a degree, 20.7% ($n = 80$) to the individuals with a master's degree and 1.8% ($n = 7$) to the individuals with a doctorate. Of the individuals surveyed, 33.4% had a leadership position. 81.3% were integrated in a team and 37.6% presented work with attendance to the public.

Instruments

Three instruments were used as well as an informed consent and a sociodemographic questionnaire. These instruments measured Prolonged Grief.

The **Event impact scale 6 (IES-6)** consists of 6 items, distributed among the three scales already given, namely the avoiding subscale (2 items), the intrusion subscale (2 items) and the Hypervigilance subscale (2 Items). This scale is self-administered, with each item 5 levels of response of the type Lickert, where, 0= Never; 1= A Little; 2= Moderately; 3 = Many Times; 4= Extremely. Validated for the portuguese population, there was a Cronbch alpha of .842, (Teixeira et al., 2013)

The **Work Productivity and Activity Impairment Questionnaire - General Health V2.0 (WPAI-GH)** consists of 6 different questions, which try to know if the individual is currently employed, the number of hours lost due to health problems, the number of hours lost for other reasons (holidays, national days...), the number of hours that effectively worked. And the two last questions, they ask that from 0 to 10, indicate when the health problems affected their lives, while working and in daily activities. Since 0 corresponds no effect at work and 10 health problems prevent the person from working.

It is also worth mentioning that the WPAI provides four types of punctuation: 1. Absenteeism (work time missed); 2. Presenteeism (impairment at work/reduced on-the-job effectiveness); 3. Work Productivity loss (overall work impairment/absenteeism plus presenteeism); 4. Activity Impairment. The following calculations were used to calculate these scores: Percent work time missed due to health problems (Absenteeism): $Q2/(Q2+Q4)$; Percent impairment while working due to health problems (Presenteeism): $Q5/10$; Percent overall work impairment due to health problems (Work productivity loss): $Q2/(Q2+Q4) + [(1-(Q2/(Q2+Q4))) \times (Q5/10)]$; Percent activity impairment due to health problem (Activity Impairment): $Q6/10$ (Reilly, 2019). However, in order to make it easier to organize the study "Work productivity Loss" was categorized as "Total Loss" and "Activity Impairment" as "Free Times Activity". After

authorization from the authors of WPAI general version, Reilly Associates, an adapted version of WPAI was created by our team focused on Mental health problems **Work Productivity and Activity Impairment Questionnaire – Mental Health (WPAI-MH)**. This version was built both in English and Portuguese, changing the content of the burden related condition to Mental and Emotional problems.

Procedure

The participants had as inclusion criteria to be employed and to be over 18 years old. Data collection was carried out through two processes, at an early stage this collection was made on paper and in a second phase was collected through free software for online questionnaires application, LimeSurvey.

However, made contacts with companies and institutions in order to significantly increase the sample. To ensure ethical norms, the objective of the study was explained, as well as confidentiality and anonymity to participants through informed consent.

To divide individuals with and without PTSD, a cutoff point of 12.5 was used (Teixeira et al., 2013).

Results

By analyzing Table 2, it is possible to verify the existence of statistically significant positive correlations between all domains of WPAI-MH and GH and IES-6. It should be noted that apart from GH absenteeism, all correlations are statistically very large.

Analyzing Table 3, the mean loss in productivity for individuals with PTSD is always higher than for individuals without PTSD. These differences are statistically significant for all

domains, except for absenteeism. In addition, the Free Times Activity domain has a higher effect. It is worth mentioning that GH presents significance in the same domains of MH.

Analyzing table 4, it is possible to verify the existence of statistically significant high positive correlations between the questions of the IES-6 and the domains: presentism, total loss and activities of the free time of the WPAI-MH. In the case of absenteeism, there are only correlations with “I felt watchful and on guard” and “I tried not to think about it”.

Calculation of Financial Loss (Hilton, Scuffham, Vecchio & Whiteford, 2010).

In table 3, it is verified that the mean value of total loss of productivity of individuals with PTSD corresponds to 44.58 and without PTSD is 24.48 (values correspond directly with percentage). Thus, people with PTSD suffer 20% more productivity impairment than people without PTSD. Applying this value to the national reality and considering a prevalence value 7.9% (Guerreiro, Brito, Batista, & Galvão, 2007) of PTSD, we reach a loss value of 1.6%. The employed population was considered to be 4877800 and the average annual basic remuneration of 13202 euros (INE, 2019)

$$\begin{array}{ccccccc}
 \boxed{\text{Employed}} & & \boxed{\text{Mean Annual}} & & \boxed{\text{Impairment}} & & \boxed{\text{Monetary}} \\
 \boxed{\text{with PTSD}} & \times & \boxed{\text{Income}} & \times & \boxed{\text{in People}} & = & \boxed{\text{loss of}} \\
 & & & & \boxed{\text{with PTSD}} & & \boxed{\text{PTSD}} \\
 & & & & & & \\
 \boxed{7.9\% \text{ of } 4\,877\,800} & \times & \boxed{13\,202} & \times & \boxed{0.2} & = & \boxed{1\,017\,468\,106.48 \text{ Euros}}
 \end{array}$$

Thus, there is an estimated loss of around 1 billion euros per year more than individuals without PTSD in Portugal.

Discussion

The objective of this investigation is to assess the impact of Posttraumatic Stress Disorder (PTSD) in work productivity and make an estimate of the financial loss of that condition. Having concluded that there is a very high impact of PTSD on the productivity of individuals. Therefore, it was found that there is a great relationship between the loss of productivity and the PTSD, and the higher the symptoms of PTSD, the higher the impairment.

Moreover, when comparing individuals with and without PTSD, it is observed that those with PTSD have a greater total loss of productivity, more presentism and a greater affection in the activities of leisure time. It should be noted that these results are reinforced by both the WPAI questionnaires. In addition, it was found that there is a very high relationship between the symptoms of PTSD and the detriment of the workers productivity.

It is possible to conclude that the fact that the person perceiving that he still has many feelings about the traumatic event and not being able to endure it, showed the most harmful symptom for the workers productivity. However, thinking about the event without wishing to do so, the existence of other things that make you think about the subject, the difficulty of concentrating, the attempt not to think and be defensive or on alert, are also symptoms that lead to a significant impairment in worker productivity.

Thus, it was possible to conclude with the data of this study, that workers with PTSD, have a 20% higher impairment in productivity compared with individuals without PTSD. Thus, making

an estimate of the financial impact of this injury, it is verified that having PTSD leads to a loss of approximately 1 billion euros.

This study allows to understand that PTSD has a detrimental effect on the workers productivity, having effects not only on the individual, but also in the workplace.

What demonstrates the relevance of identifying and understanding all factors influencing the productivity of individuals, which will allow, firstly, to act in improving the mental health of workers. But in addition, these discoveries could be an aid in reducing the loss of business productivity and consequent decrease in monetary/financial losses. Thus, it is necessary to have a notion of the need to undertake more research in this area, to do the possible to carry out studies with higher and more representative samples, with the main objective of identifying all the factors harmful to the Workers productivity. So that we can act more concretely and effectively.

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Tables

Table 1.

Sample characterization

	<i>n</i>	<i>%</i>	Min	Max	<i>M</i>	<i>SD</i>
Female	260	67.4				
Male	126	32.6				
Age			18	64	34.51	11.13
Working Time *			0	45	12.26	10.64
Not married	165	42.9				
Separated / Divorced	25	6.5				
Married / Fact Union	195	50.6				
9th grade or less	85	22.1				
12th grade or equivalent	122	31.6				
Degree or Baccalaureate	90	23.3				
Master or more	87	22.5				
Chief Position	129	33.4				
Integrated Team	314	81.3				
Public service	145	37.6				

Table 2.*Correlations between WPAI with PTSD*

		IES-6 Total
WPAI-MH	Presentism	.407**
	Absenteeism	.179**
	Total loss	.401**
	Free Times	.445**
WPAI-GH	Presentism	.274**
	Absenteeism	.158*
	Total loss	.263**
	Free time	.387**

*. $p > .05$ **. $p > .01$

Table 3.*Differences between WPAI e PTSD*

		With PTSD (n=75)		Without PTSD (n=167)		<i>t</i>	<i>P</i>	<i>d</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
MH	Presentism	40.31	27.84	21.57	21.83	-5.33	<.001*	-.79
	Absenteeism	9.52	20.97	4.95	16.66	-1.76	.08	-.25
	Total loss	44.58	29.28	24.26	24.48	-5.15	<.001*	-.78
	Free Times Activity	46.00	27.15	22.35	22.82	-6.60	<.001*	-.98
GH	Presentism	26.53	28.78	13.80	23.24	-3.65	<.001*	-0.51
	Absenteeism	8.41	21.60	5.50	18.63	-1.04	.30	-.15
	Total loss	28.96	31.29	16.73	26.76	-3.05	<.001*	-.43
	Free Times Activity	37.43	28.67	20.90	19.32	-5.23	<.001*	-.73

* $p < .01$

Table 4.*Correlations between WPAI-MH and IES-6 items*

	Presentism	Absentism	Total Loss	Free Times Activity
Any reminder brought back feelings about it	.324**	.167*	.297**	.380**
Other things make me think about it	.307**	.158*	.306**	.337**
I tried not to think about it	.240**	.007	.212**	.253**
I was aware I still had a lot of feelings about it. but I didn't deal with them.	.410**	.199**	.424**	.438**
I had trouble concentrating	.341**	.212**	.356**	.408**
I felt watchful and on guard	.351**	.128	.340**	.350**

*. p> .05 ** .p>.01

Scientific Presentations

1. Poster presentation, ESTSS 2019 – Rotterdam, Holland

The Specific Impacts of Mental Health Problems on Productivity: Posttraumatic Stress and Prolonged Grief

José Rocha,, Ricardo Silva, Ângela Nogueira, and André Moreira

Background: The Work Productivity and Activity Impairment Questionnaire - General Health (WPAIGH) provides a quantitative report by patients of the amount of absenteeism, presentism and limitations of daily activity, related to general health problems. There are several versions of this scale for specific health problems; however, there is no version for mental health problems nor information on associations with psychosocial risks at work.

Methods: An adapted WPAI was created for Mental Health problems (WPAI-MH) both in English and Portuguese, which was applied to 56 professionals (mean age 40.7 years, standard deviation 11.9, 55.4% women) together with an informed consent form, the Impact of Events Scale 6, the Inventory of Complicated Grief, the WPAI-GH and the Copenhagen Psychosocial Questionnaire (COPSOQ-II).

Results: The analysis model begins by checking the correlation between indicators of the general health version and the mental health version of WPAI: there is a positive and significant correlation ($r = .583$). To clarify which components of work experience are most affected by posttraumatic stress symptoms and Prolonged Grief, we calculated Pearson's correlations to differentiate the impacts. Conclusions: The results are discussed from the perspective of an extended model explanatory of the impacts of traumatic events and grief, considering the possible moderating role of on-site job conditions. Also discussed are the positive aspects and limitations of specifying the version of WPAI for the assessment of mental health problems, enabling a more detailed assessment of indirect costs of mental health problems.

