

Multi-professional Intervention in Centrals of Telemarketing Analysis Ergonomic and Cost-Effectiveness

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Abstract— Introduction: Telemarketing service in Brazilian industry improved 400% between in 1996 to 2016, creating 450 thousand new jobs. **Objectives:** To assess the direct costs of absenteeism of worker in three companies of telemarketing services in the city of Sao Paulo before and after a program of health promotion and prevention of DORT. **Methods:** This is a prospective study conducted in central phone in the São Paulo city. It was assessed absenteeism index pre and post-intervention, as well as the direct costs of absenteeism. The intervention was performed by professionals of Physiotherapy, engineer, Nutrition and Psychology. The program of multi-professional intervention had duration of 3 months, were carried out consultations, ergonomic adjustments and therapies within camping of companies. **Results:** 472 and 254 certificates were presented pre and post intervention respectively ($p < 0.0001$), 7.5 and 3.5 hours not worked by employee, pre-and post-intervention respectively ($p < 0.0001$). The hours worked in two months before start of the study was not different for groups of employees who have submitted medical certificates or not, in the one before month which it were data collected pre-intervention. There was a reduction of direct costs with hours paid but not worked in relation to post pre-intervention ($p < 0.0001$), when the added cost with the team and spent hours not worked on post-intervention, was also found significant reduction ($p < 0.0005$). **Conclusion:** There was significant reduction in direct costs with absenteeism after multi-professional intervention program. The total cost to multi-professional team was less than 40% of the cost with absenteeism pre-intervention. **Keywords— Absenteeism to work, Cost-Effectiveness, multi-professional intervention.**

I. INTRODUCTION

Until the eighteenth century there were no concerns about worker health. With the advent of the Industrial Revolution and new industrial processes to the modernization of machines, diseases or accidents arising from work began to emerge¹.

With the automation of companies and the evolution of modern life new services are created that allow the orientation and capture of customers via telephone: tele-service², which began in Brazil in the late 1980s³. Call centers or telephone answering centers aims at developing standardized and continuous marketing actions or favoring communication with the client, public or government agencies, using a telephone, computer and data system⁴, with the existence of dedicated employees in the customer service, simultaneous use of telephone and computer and control of telephone calls made by an automatic call distributor (DAC)³.

According to the Brazilian Telemarketing Association⁵ (ABT), the Brazilian sector quadrupled in size between 1996 and 2001, reaching 450 thousand jobs and moving 67.4 billion reais and believed that by the end of 2020 it will have reached more than 600,000 direct jobs and according to the Telemarketing Workers' Union⁶, the number of call centers grew 30% in the last 20 years.

The teleworking professionals' workload and job position provide a high mental and physical demand, which can often contribute to the presence of pain to these workers⁷ and this promotes the removal of the employee from his post, called absenteeism⁸.

According to the National Institute of Social Security (INSS)⁹ the professional categories that lead the statistics of occupational injuries are bankers, typists, assembly line operators, telemarketers, secretaries and journalists. The same institute claims that there is an

increasing number of withdrawals from telemarketing work due to anxiety and depression.

According to INSS and others authors^{10,11,12,13}, the company spends about \$ 3 billion in security payment for leaving the work. Reis et al¹⁴ states that several studies indicate that short-term leave can provide information about the health status of a given group of workers, but may also be related to factors related to work organization, such as length of work, shifts, and autonomy at work, among others. The companies lose annually \$2,5 billion with actions such as: emergency hospital service, production interruption, replacement of workers, training, overtime, employee recovery and salaries paid to outworkers.

The objective of the present study was to evaluate the direct costs of absenteeism in outsourced companies that provide banking telemarketing services in the city of São Paulo before and after a health promotion and ergonomic adjustments.

II. MATERIAL AND METHODS

This is a prospective study with intervention of 90 days in a specific population with telemarketing workers in call centers in the city of São Paulo. Data collection was requested in six companies, but only four companies allowed the data to be collected, access to the medical certificates presented and number of hours worked by each employee during the entire period of the study was allowed.

Prior to the intervention, data were collected regarding the number of medical certificates delivered to the personal department in February of the year of the study, as well as the number of hours worked by each employee referring to the two months prior to the beginning of the protocol. No personal data were collected, only ICD, the date of commencement of the certificate and the number of hours of absence.

From April of the same year an intervention of character of health promotion and prevention against diseases caused by "stresses" and repetitive efforts and food disturbances and ergonomic adequacy began.

Initially there were 654 employees, during the execution of the project the workforce was expanded to 661, the work schedule was 36 hours a week, with 6x1 scales, that is, six days work and one day off. At the place where the research is carried out, it develops telephone answering activities and data entry through typing, the mechanism for accomplishing this task is with the employees in the sitting position, with 15-minute snack breaks (not counted in the hourly load) and two 5-minute bathroom breaks for a total of 25 minutes of breaks.

They worked 24 hours a day, seven days a week. These telemarketing professionals required concentration

with a high mental, physiological and anthropometric demand, they remained in the seated position for long periods, they were not allowed to stand up at all, even when there were no connections to be answered. The working mechanism was performed with data entry through the keyboard and searched the computer monitor and the service was performed with a headphone, requiring the professional, repetitive typing movements.

The 90-day intervention program was carried out by physiotherapists, engineers, psychology and nutrition professionals. It was carried out for 12 hours / day and these professionals stayed in the company for three hours for each shift, found so that the four shifts were also attended. These professionals were linked to the work safety of the company.

The health intervention and prevention program had educational classes once a week. The classes lasted 20 minutes and covered topics such as: alcoholism, smoking, stress, eating habits, physical activities, rest, relationships and behaviors. It was placed in strategic places in the companies posters encouraging the practice of the topics covered in the lectures, as well as, was created the incentive prize "the collaborator health of the week". A primer was created with models of exercises and stretches that the collaborators could carry out during the breaks at work or in the period that was not working.

With the objectives of the employees receiving physiotherapeutic, psychological and nutritional care, offices were made available in the camping of companies. also made an ergonomic acquisition of the workplace by the engineers.

III. RESULTS

In the last three months leading up to the study 472 certificates were presented for a population of 654 telemarketers who worked 6 hours a day. 53 subjects presented two medical certificates; three individuals presented three medical certificates. The mean age of the population was 25.1 ± 6 years, with the average working time in companies being 1.7 ± 0.7 years. According to data from the department of occupational health of companies, on average 95% of the workers did a routine medical examination, of which there were no individuals unable to work. Regarding the dimensionless medical examinations, 100% of the workers had performed.

The number of hours not worked, that is, the absence of the employee in the accomplishment of the task that was designated pre-intervention was 4,910 hours, after the intervention the number of hours not worked was reduced to 2,111 ($p < 0,0001$) Figure 1.

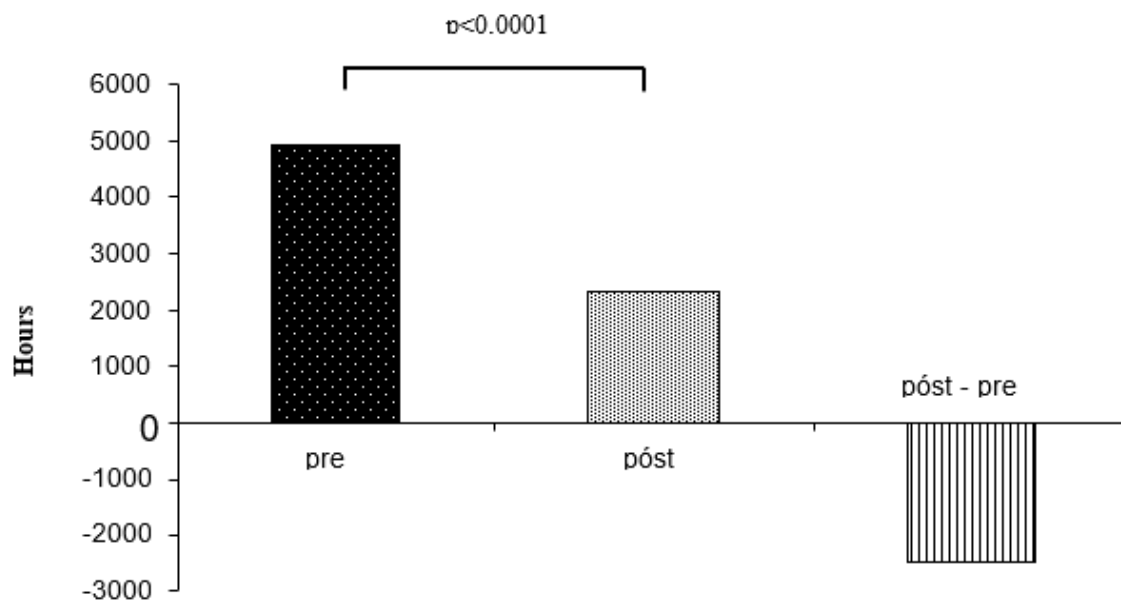


Fig.1: Number of hours not worked by the employees in a month before the post intervention

There were 472 and 254 medical certificates presented pre- and post-intervention respectively ($p < 0,0001$), with 7.5 and 3.5 hours not worked per employee, pre- and post-intervention respectively ($p < 0.0001$) Figure 2.

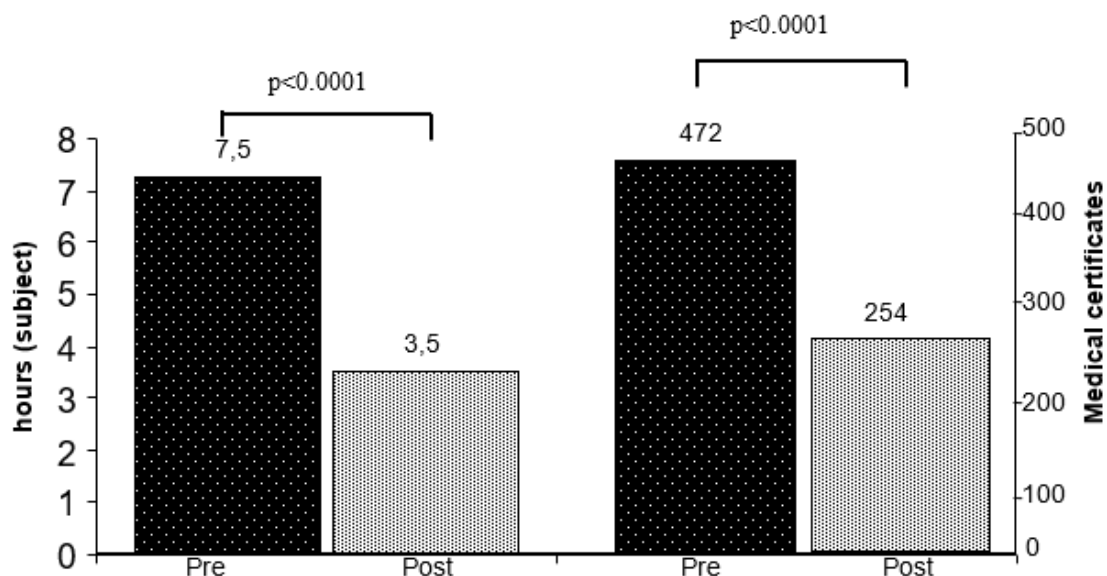


Fig.2: Number of hours not worked on average by individuals in a month and number of medical certificates delivered to the personnel department in the same period before and after intervention.

The number of medical certificates presented by women and men was similar in proportion. The medical certificate index for each employee in the pre-intervention period was 0.72, while in the post-intervention period it was 0.38 ($p < 0.0001$); during the intervention, consultations and treatments were carried out in the campsites for the employees who needed them. In the physiotherapy sector, 281 consultations / month, 179 psychology and 155 consultations were carried out.

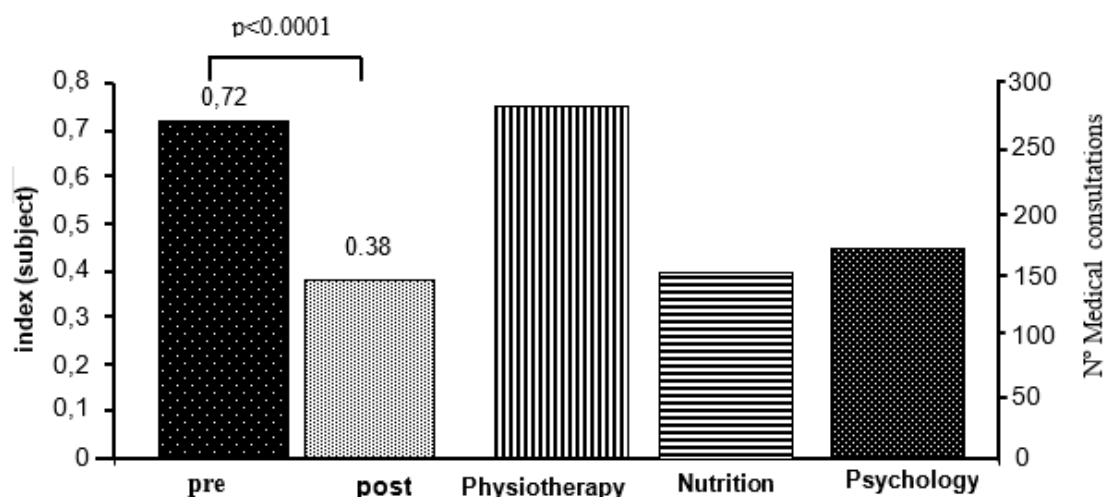


Fig.3: General index of medical certificates delivered to the personal department of the companies researched before and after intervention and average number of visits / month performed by the team of physiotherapists, nutritionists and psychologists.

The largest number of absences was presented by the Cid Z00 (general examination and investigation of people without complaints or diagnosed), pre-intervention 132 and post 75, among the reasons for diagnosed diseases, the main cause of absences justified by submission of attestations physicians was "osteomusculoskeletal" specialty with 79 pre and 18 post, followed by gastric diseases 53 pre- and post-intervention respectively, Table 1.

Table.1: Number of attestations by specialty presented in one month.

Specialty	Pre (%)	Post (%)	(post – pre)
Dermatology	1 (0.22)	3 (1.18)	2
Digestive	2 (0.42)	8 (3.16)	6
General clinical examination	132 (27.9)	75 (29.6)	-43
Gastrology	53 (11)	18 (7.1)	-35
Gynecology	1 (0.22)	12 (4.7)	11
Neurology	29 (6.1)	17 (6.7)	-12
Dentistry	26 (5.5)	14 (5.5)	-12
Ophthalmology	27 (5.72)	25 (9.8)	-2
Osteomusculoskeletal	79 (16.74)	18 (7.8)	-61
Otolaryngology	52 (11)	33 (13.0)	19
Others	14 (2.9)	0 (0)	14
Psychiatry	4 (0.85)	1 (0.36)	-3
Respiratory	25 (5.29)	16 (6.3)	-9
Traumatology	4 (0.85)	2 (0.72)	-2
Urology	21 (0.44)	11 (4.3)	-10
Total	472	253	-219 (- 46.4)

Regarding the probability of presenting a medical certificate by a collaborator, it was significantly higher in the pre-intervention than in the post-OR 1.8 IC 95% (1.68 to 2.09), also found significance for performing unspecified exams OR 1.7 (1.36 to 2.31), gastric specialties OR 2.9 (1.76 to 5.02), orthopedic and traumatic OR 4.4 (2.68 to 7.31). For neurology specialties OR 1.9 (0.956 to 3.10) and pulmonary OR 1.8 (1.00 to 3.45) were not statistically significant, Table 2.

Table.2: Chance of absenteeism at work by presentation of medical certificate without and with intervention.

Variables	Odds ratio	CI	p
Medical certificate	1.0		< 0.0001
(with intervention)	1.8	1.68 a 2.09	
Medical certificate	1.0		<0.0001
(without intervention)	1.7	1.36 a 2.31	
Perform exams	1.0		<0.0001
(with intervention)	2.9	1.76 a 5.02	
Perform exams	1.0		0.091
(without intervention)	1.9	0.956 a 3.10	
Gastric	1.0		<0.0001
(with intervention)	4.4	2.68 a 7.31	
Gastric	1.0		0.064
(Without intervention)	1.8	1.00 a 3.45	

The number of hours worked in the last two months prior to the beginning of the study was not different for the groups of employees who presented or not a medical certificate for the month in which the pre-intervention data were collected, but it was verified that the number of hours worked for individuals who had post-intervention absenteeism was higher than those who had pre-intervention absenteeism ($p = 0.032$), as well as those who had no absenteeism ($p = 0.036$), Figure 4.

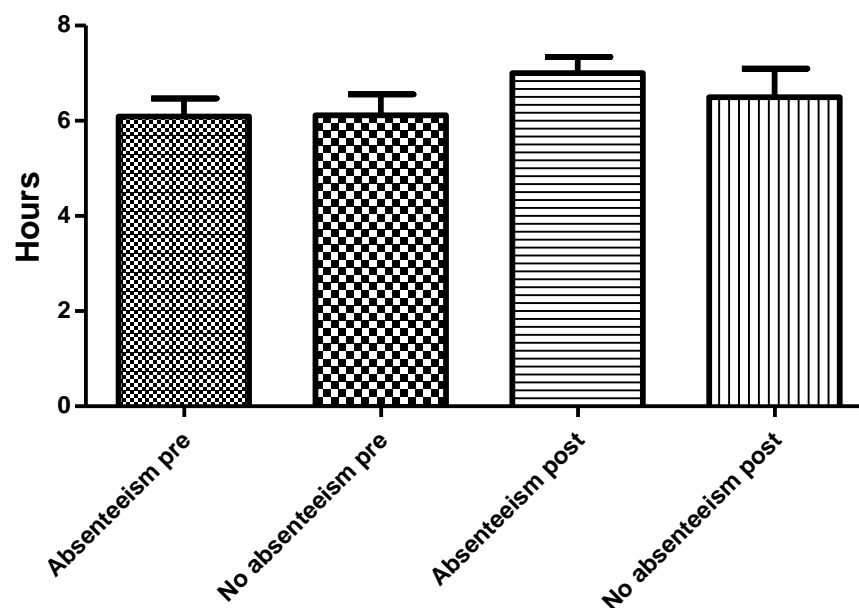


Fig.4: Hours worked during the last three months that preceded the study for the groups of individuals who presented and did not present medical certificates during the month of data collection.

Regarding the cost effectiveness of the prevention and health promotion intervention program carried out by physiotherapy, nutrition and psychology professionals, it showed a significant reduction of direct costs with paid hours, but not worked post in relation to pre-intervention ($p < 0, 0001$), when we added the cost to the team and the hours worked after the intervention, we also found a significant reduction ($p < 0.005$).

IV. DISCUSSION

Some findings from this study, three deserve special consideration. First, multi-professional intervention was effective in reducing absenteeism and direct costs. Second, the main reason for leaving work was routine examinations. Third, the number of hours worked in the last three months preceding the survey were similar

for those who submitted and did not present the medical certificate.

Medical records through the system resources human department of each company collected the data. Each employee left a record after leaving. The incidence of withdrawal was similar in the four companies; we believe that this was a safe method to evaluate the incidence of work leave before and after intervention.

Absenteeism has become a chronic problem for both organizations and administrators. Its causes are linked to multiple factors, making it complex and difficult to manage. Absenteeism is the absence of the worker in the service, when he was expected to be present. This absence of the worker has its negative effect, decreases the production and increases the direct costs of the company.

It was verified that the great majority of absenteeism was caused by medical examinations. It is estimated that every dollar invested in workers' health care programs will result in a savings of four dollars without health care expenses^{15, 16}.

Our study population remains all the time working in the seated position and performing repetitive movements which can increase absenteeism due to work-related diseases^{17,18,19}. Grandjean²⁰ shows that in individuals who remain for long periods in the seated position there is sagging of the abdominal muscles and develops kyphosis, and it undermines the functioning of internal organs. For Nascimento et al⁸, the pain promotes the removal of the employee from his post, called absenteeism, which implies an increase in the costs directed to public and private agencies that burden other employees and impair the quality of care²¹.

During the month in which the data were collected prior to the intervention, 40% of the certificates with osteo specialty were referred to the absence of 6 hours, being 16% of 12 hours and 15% of 18 hours, in the post-intervention only 5 % of 15 hours and 95% of 6 hours. With these absences from the job, the calls were answered by those in the central office, with a consequent increase in the demand and effort of the worker, who had to answer the call within five seconds, the employee was allowed to perform two hours overtime. work per day, as requested by the company, especially in the first fifteen days of the month after 9:00 pm, but the breaks remained unchanged.

In 2002, in the Fundacentro auditorium in São Paulo²¹, there was a seminar on tele-service activity in which 29 items were exposed that suggest as risk factors present in the attendant's activity and have an impact on worker's health, the main risk factors cited were : insufficient intervals, indisposition in the client and attendant relationship, constant conflicts with superiors, constraints and irregular working hours.

During the multi-professional intervention program it was encouraged that product recycling or employee motivation meetings were held outside the attendant's office hours, these hours being counted as a bank of hours or overtime. Another factor that we believe contributes effectively to the reduction of absenteeism was the consultations and therapies carried out in the companies themselves.

The limitations of this study were mainly due to the fact that the satisfaction of the company's employees about the health service offered was not verified, as well as not to verify if there was an increase in the company's productivity.

V. CONCLUSION

There was a significant reduction of direct costs with absenteeism after the multi-professional intervention program, mainly due to the hours not worked and justified by medical certificates and an increase in the number of hours actually worked by each employee. The total cost with the multi-professional team was less than 40% of the cost with pre-intervention absenteeism.

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