

ORIGINAL ARTICLE

Burnout among employees in human service work: design and baseline findings of the PUMA study

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Abstract

Aim: To present the theoretical framework, design, methods, and baseline findings of the first Danish study on determinants and consequences of burnout, and the impact of workplace interventions in human service work organizations. **Method:** A 5-year prospective intervention study comprising 2,391 employees from different organizations in the human service sector: social security offices, psychiatric prison, institutions for severely disabled, hospitals, and homecare services. Data were collected at baseline and at two follow-ups. The authors developed a new burnout tool (the Copenhagen Burnout Inventory) covering work-related, client-related, and personal burnout. The study includes potential determinants of burnout (e.g. the psychosocial work environment, social relations outside work, lifestyle factors, and personality aspects) and consequences of burnout (e.g. poor health, low job satisfaction, turnover, and absenteeism). Here, the focus is on the description of the study population at baseline, including associations of work burnout with psychosocial work environment scales and absence. **Results:** Response rate at baseline was 80.1%. Midwives and homecare workers had high levels on both work- and client-related burnout. Prison officers had the highest level on client-related burnout. Supervisors and office assistants had low levels on both scales. Work burnout showed the highest correlations with job satisfaction ($r = -0.51$), quantitative demands ($r = 0.48$), role-conflicts ($r = 0.44$), and emotional demands ($r = 0.42$). Sickness absence was 13.9 vs 6.0 days among participants in the highest and lowest work burnout quartile, respectively. **Conclusion:** The findings indicate that study design and methods are adequate for the upcoming prospective analyses of aetiology and consequences of burnout and of the impact of workplace interventions.

Key Words: Burnout, Copenhagen Burnout Inventory, exhaustion, human service work, intervention study, occupational health, prospective study, psychosocial factors

Introduction

During the mid-1990s Danish unions in the human service sector recognized that an increasing number of their members took long-term sick leave, or applied for retraining or early retirement, because of burnout symptoms. Although Denmark has one of the largest numbers of employees working in the human service sector in the Western world no major study on burnout had been conducted in Denmark. For these reasons, we designed the study on Burnout, Motivation and Job satisfaction (Danish acronym: PUMA), a five-year prospective intervention

study on burnout in the human service sector. The study has four aims: (1) to map the extent of burnout among different occupational groups in the human service sector in Denmark; (2) to identify individual and workplace factors that increase the risk of burnout; (3) to analyse the impact of burnout on job satisfaction, job turnover, absenteeism, early retirement, morbidity, and mortality; and (4) to evaluate whether workplace interventions that aim to improve the psychosocial work environment can reduce burnout and its repercussions.

Burnout is a concept developed in practice. It first emerged in the United States in the mid-1970s when

two researchers, Herbert Freudenberger and Christina Maslach, independently described burnout as a negative consequence of human service work, characterized by emotional exhaustion, loss of energy, and withdrawal from work [1–11]. In the pilot phase of the PUMA study we tested the Maslach Burnout Inventory (MBI) but did not find it satisfactory [4]. First, the respondents strongly criticized a number of the questions. Hence, we did not find the questionnaire usable in the Danish context. Second, the questionnaire is restricted to use among employees working with recipients (clients). Third, the burnout concept of the MBI consists of three parts of which one can be regarded as a coping strategy (depersonalization) and another as a consequence of burnout (reduced personal accomplishment). Fourth, the MBI defines burnout as a reaction that only takes place among people who do “people work”, which leads to a circular argument. In the PUMA study we wanted to focus on exhaustion as the core element of burnout. In order to do this, we developed our own instrument, the Copenhagen Burnout Inventory (CBI), that focuses on exhaustion. We distinguish between three different types of exhaustion: personal burnout, work-related burnout, and client-related burnout. A detailed description of the CBI is given in the method section of this paper, and a manuscript with a detailed comparison of the CBI burnout concept with the burnout concept of other researchers is in preparation.

In PUMA, we are focusing on the specific type of human service work called “*client work*”. In our basic understanding of working with humans we distinguish between three categories: clients, customers, and colleagues. *Clients* can be social service recipients, patients, elderly citizens, pupils, or inmates. The basic relation to the client is professional, and the employee is acting on behalf of society in order to bring about a change in the client (to become healthy, more educated, less criminal, etc.) [12]. *Customers* are buying a commodity on the market. Relations with customers are commercial and usually much shorter and less emotionally involving for the employee. Finally, we use the term *colleagues* to describe all employees at the worksite with whom the person has interaction (including supervisors and subordinates). Relations with colleagues can be emotionally involving and long lasting but also superficial and short. Unfortunately, the international literature on burnout rarely distinguishes between clients and customers [8,13].

Since the 1980s, more than 5,500 studies on burnout have been published [8]. Most studies indicate that burnout is a serious problem. In

Sweden and Finland population-based studies found severe burnout in 5–7% of the workforce [14,15]. In the Netherlands researchers estimated that 3–16% of Dutch human service work professionals have severe burnout [8].

Research indicates that work-related factors such as high demands and low influence, low social support, and low role-clarity increase the risk of burnout [8]. Factors outside work that need to be considered are social relations and personality [8]. However, knowledge about causality is still limited, because most studies are cross-sectional and therefore do not allow causal inference. The relatively few prospective studies often involved participants from only one occupational group, which results in low variation of exposure and therefore limits the ability to analyse causal associations. Moreover, most prospective studies covered only one year or less of follow-up, included few participants, or had low response rates [4,8]. Burnout, however, is associated with risk of absenteeism, sick leave and disability claims, as well as low job satisfaction, and high job turnover [8,14].

Figure 1 shows the theoretical framework of PUMA regarding the determinants and consequences of burnout. The framework is based on both extensive reviews of the literature and on discussions with focus groups, employers, and employees’ representatives. We hypothesize that the psychosocial work environment plays a major role in the onset of burnout (see Figure 1). Because working with clients is a core characteristic of human service work [12,13], we differentiate the psychosocial work environment in client-related and non-client-related factors. Client-related factors include emotional demands and demands for hiding emotions at work. This also covers situations where focus is solely on helping the client and when focus is on both help and control, e.g. in a psychiatric hospital [12]. Non-client-related factors are psychosocial exposures often measured in work and health research, such as quantitative demands, influence in the workplace, or social support from supervisors and colleagues [17]. Interestingly, although the relation of burnout to client work is widely acknowledged, most burnout studies have focused on these general psychosocial exposures, whereas only a few studies have explicitly addressed client-related factors [13].

In addition to psychosocial work environment factors, sociodemographic characteristics of the employees (e.g. age, sex, and cohabitant status), social relations outside the workplace, lifestyle (e.g. smoking and alcohol consumption), and personality aspects may influence the risk of burnout. These

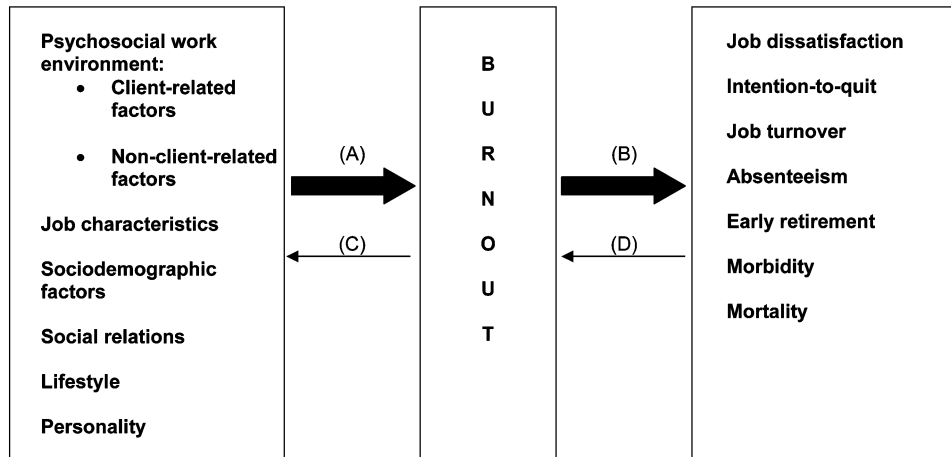


Figure 1. Theoretical framework of the PUMA study.

factors could act independently, but could also interact or mediate each other's effect.

Potential consequences of burnout (Arrow B) are job dissatisfaction, job turnover, absenteeism, and early retirement, and possibly morbidity and mortality. As with the determinants, the consequences might be interrelated. For example, poor health will probably increase absenteeism from work and early retirement.

Whereas the main interest of PUMA is to analyse the determinants and consequences of burnout, we acknowledge that not all causal associations in the figure are uni-directional. It is possible that burnout influences some of the variables we plan to analyse as determinants (Arrow C). For example, high levels of burnout may lead to changes in workplace characteristics, such as an increase in part-time employment or a decrease in the amount of time working with clients. Conversely, some consequences might also influence burnout (Arrow D). For example, quitting a highly demanding job and getting a less demanding job (job turnover) could result in a decreasing level of burnout. These issues of bi-directionality and reciprocal effects need to be addressed in the data analyses. We are able to do this because PUMA is a prospective study with a full-panel design, including three measurement times (baseline, three-year follow-up, five-year follow-up) at which both potential predictors and potential consequences of burnout are measured. This will enable us to disentangle uni-directional and bi-directional (reciprocal) effects of the variables we regard as potential "determinants" and "outcomes".

In this first paper, we describe the design and methods of PUMA and present selected baseline findings regarding psychosocial work environment, sickness absence, and burnout.

Material and methods

Study design

PUMA is designed as a five-year prospective intervention study in different organizations in the human service sector. All organizations were self-selected to the study after meetings between representatives from employers' and employees' organizations and the PUMA project group. Criteria for inclusion were (1) the organizations should represent different areas within the human service sector; (2) the size of the organization should be between 200 and 500 employees; (3) all occupational groups within each organization should be willing to participate; (4) the organizations should commit themselves to the entire five-year study period and (5) personal registration numbers (national identity numbers) of the employees could be collected and used in later record linkages by the Danish Institute of Occupational Health, including linkages to Danish registries for hospitalization and mortality (Hospitalsindlæggelsesregisteret, Dødsårsagsregisteret).

Initially, we also had the criterion that the organizations should agree to implement interventions after the collection of baseline data, but neither employers nor employees were willing to commit themselves in advance. However, it was agreed that the organizations should receive the survey results after each round and establish project committees to review and discuss the findings. Based on the survey results and the work in the committees, the organizations could develop and implement interventions. PUMA therefore is a quasi-experimental study, in which the feedback of the survey results could initiate *ad-hoc interventions*. Type, implementation, and conduct of these interventions will be

evaluated through separate telephone interviews with key informants and questionnaires to all participants at later stages of the PUMA study. The impact of the interventions on working conditions, burnout, and health outcomes will be analysed both at the individual level and at the workplace level.

Study population

Seven different organizations within the human service sector participated in the study: (1) 10 social security offices in an urban area; (2) a state psychiatric prison; (3) 16 county institutions for severely disabled people; (4) three somatic wards (surgical, medical, gynaecological-obstetric) from two county hospitals; (5) one psychiatric ward from a psychiatric hospital; (6) one homecare service in a rural area; and (7) one homecare service in an urban area. All occupational groups in each organization were invited to join the study, resulting in 2,391 eligible employees. At baseline, 1,914 employees participated in the survey, yielding a response rate of 80.1%.

The Danish Data Protection Agency (Datatilsynet) and Scientific Ethical Committees (Videnskabetisk Komité) in the respective counties have given approval for the PUMA study.

Data collection

Data were collected in 1999–2000 (baseline) and in 2002–03 (first follow-up). A third round of data collection is planned in 2005 (second follow-up). Therefore, PUMA consists of three cross-sectional samples and one prospective cohort (baseline participants followed up over time). All rounds have the same sampling procedure: we obtained the home address of all employees from the participating workplaces and then sent an invitation letter from the organization together with a study description and the survey questionnaire. We contacted the project committee at worksites with low response rates to find the reasons for low participation and to help improve employers' and employees' commitment to the study. Employees who left the cohort after baseline or first follow-up assessment will get a special questionnaire in the 2004–05 follow-up to assess their current connection to the labour market. Employees who entered the workforce in the organizations after the baseline assessment were eligible for participation in the follow-up surveys (open cohort principle).

Measurements

Measurements in PUMA were mainly based on self-reported questionnaires. In accordance with the theoretical framework presented in Figure 1, we measured burnout, its potential determinants, and its potential consequences.

Burnout. Burnout was measured with the Copenhagen Burnout Inventory (CBI), an instrument specifically developed for PUMA [18,19]. The CBI focuses on exhaustion and is divided into three scales. *Personal burnout* contains six items on general symptoms of exhaustion and is applicable to every person, regardless of whether the person is a member of the workforce or not. *Work-related burnout* comprises seven items on symptoms of exhaustion related to work and applies to every person in the workforce. *Client-related burnout* is based on six items on symptoms of exhaustion related to working with recipients in human services and is applicable only to people who work with clients. All items have five response categories. The responses are rescaled to a 0–100 metric (the values being 0–25–50–75–100). Scale scores are calculated by taking the mean of the items in that scale. A full list of all burnout items – together with the response frequencies and Cronbach's alphas for the scales – is provided in the result section.

Non-client-related psychosocial work environment factors. In accordance with the theoretical framework in Figure 1, we distinguished between client-related and non-client-related psychosocial work environment factors. Non-client-related factors were measured with scales from the Copenhagen Psychosocial Questionnaire (COPSOQ), a comprehensive and validated instrument on work and health [20–22]. Among other things, the COPSOQ includes scales on well-established psychosocial workplace factors such as demands, control, and social support at work [23]. We used a total of 16 scales: two scales on *demands* (quantitative demands, cognitive demands), five scales on *active and developmental work* (influence, possibilities for development, meaning of work, commitment to the workplace, and quality of leadership), seven scales on *interpersonal relations at work* (feedback, predictability, role clarity, role conflict, social support at work, social relations, and sense of community), one scale on *job insecurity*, and one scale on *job satisfaction*. A complete list of all scales, including their correlations with work burnout, is presented in the results section.

Client-related psychosocial work environment factors. Client-related factors were assessed with scales on emotional demands and demands for hiding emotions from the COPSOQ, single items with specific questions about working with clients, and one proxy measure about types of client. The single items were developed de novo for the PUMA study to obtain more detailed information on the daily work with clients: (1) *frequency of client contact* was measured with the question “How much contact do you have on average with clients during the working week?”, with the four response categories “almost all the working time”, “more than half the working time”, “less than half the working time”, and “never/almost never”; (2) *demands from clients* were measured with the question “The demands are many in the xxx sector. How do you experience these demands?”, with seven response options ranging from “very low demands” to “very high demands”; (3) *increasing demands from clients* was measured with the question “Do you experience that the clients in general have become more demanding during the last few years?”, with five response categories ranging from “to a very high degree” to “to a very low degree”; (4) *rewards from clients* was measured with the question “Do you feel that your work is appreciated by the clients?”, with five response categories ranging from “always” to “never”; and (5) *violence and threats from clients* was measured by asking the participants to list the number of these occurrences during the last 12 months. Finally, we used the type of organization (prison, hospital, social security office etc.) as a proxy measure for the *type of client* that the participants are exposed to.

Other workplace characteristics. We collected data on other workplace characteristics, such as the type of department or institution, job title, seniority, and number of working hours per week of the participants and work shift arrangement.

Sociodemographic factors. We assessed age, sex, education, cohabitant status, number and age of children living at home.

Social relationships outside the workplace. We measured social support and social networks outside the workplace and interferences between demands at work and at home with single items, which had been previously been used in the Intervention Project on Absence and Well-being (IPAW study) [24].

Lifestyle. We asked the participants about their smoking habits (never smoked, former smoker, and current smoker) and the number of cigarettes or amount of tobacco smoked per day. Weekly physical activity was assessed on a four-point response scale, ranging from almost totally passive to strenuous exercising for more than four hours per week. Alcohol consumption was measured by asking the participants how many drinks per week they had consumed on average during the last four weeks. We assessed height and weight and calculated the body-mass index (BMI).

Personality. We used the *Sense of Coherence Scale* (SOC) to assess an important aspect of personality. The concept was developed by Antonovsky and describes a perception of the world as comprehensive, manageable, and meaningful [25]. We used a nine-item SOC scale, which was developed by Setterlind and is included in the COPSOQ.

Job satisfaction and job turnover. We measured job satisfaction by using the respective scale from the COPSOQ. Job turnover was defined as leaving the organization and was assessed by comparing the lists of employees at baseline and at follow-up.

Absenteeism and early retirement. We measured *sickness absence* by asking the participants to list the number of sickness absence days and sickness absence spells over the last 12 months. In accordance with regulations in Denmark, we defined *early retirement* as retiring before the age of 60 years. We will also assess this variable objectively by linking the PUMA study population to national registers.

Self-reported health indicators. We measured self-rated health with scales on *general health*, *mental health*, and *vitality* from the Danish version of the Short-Form 36 (SF-36) questionnaire [26–28]. *Stress reactions* were measured with three scales on behavioural, somatic, and cognitive stress reactions, which were developed by Setterlind and are included in the COPSOQ. We further asked the participants about the frequencies of *headaches* and *migraines* and their *medicine intake* (pain-killers, tranquillizers and sedatives) over the last four weeks.

Data analysis

In this paper, we explore the distribution of burnout in the study population on organizational and occupational group-level based on data from the

baseline survey. We dichotomized the responses on the client factors: contact *less than half or more*, versus *none of the working time*; demands from clients rated 6–7 versus 1–5; rewards from clients *always or often* versus *sometimes to never*; and 1+ versus 0 events of violence/threats during the last 12 months. All analyses were stratified by organization and occupational group. We investigated the internal consistency of the three burnout scales by calculating Cronbach's alphas (with an alpha of 0.70 or higher indicating satisfactory internal consistency), analysed inter-correlations between the scales with Spearman's rank correlation, and examined the response pattern for each item of the scales. We plotted work burnout and client burnout scores to identify occupational groups with co-occurrence of both high work burnout and high client burnout. For the psychosocial work environment scales, we determined the internal consistency with Cronbach's alphas and calculated Spearman's correlation coefficients with work burnout. Finally, we explored associations between work burnout and sickness absence by dividing the burnout scores in quartiles and calculated the number of absence days for each quartile.

Results

Characteristics of the PUMA study population at baseline

All organizations had high response rates of 74% or more at baseline (Table I). Most occupational groups had client contact for more than two-thirds of the working week, except some supervisors and office assistants. Hospital doctors and midwives reported the highest demands from clients, while district nurses in urban homecare reported low client demands. District nurses (urban homecare) and senior doctors reported the highest rewards from clients, while supervisors and office assistants in the psychiatric prison reported low rewards. Threats and violence were reported by 67% of the psychiatric staff, and were reported more often in the psychiatric prison and the institutions for severely disabled than in the other organizations.

The average age of the study participants was 42 years (SD 10.3), with only small variations between the organizations. The majority were women (83%), with the exception of the psychiatric prison, which had a near equal gender distribution.

Response to the burnout items and psychometric properties of the burnout scales

Cronbach's alphas for the scales were 0.87 for both personal and work-related burnout, and 0.85 for

client-related burnout (Table II). The correlation coefficients between the scales were 0.73 for personal and work burnout, 0.46 for personal and client burnout, and 0.61 for work and client burnout.

Work burnout and client burnout among occupational groups

In Figure 2 we plotted work burnout against client burnout for the occupational groups. A co-occurrence of both high client and high work burnout was found in midwives, urban home care workers, social workers in the social security service, and social care workers in the institutions for the chronically disabled.

Internal consistency of psychosocial work environment and associations with work burnout

Cronbach's alphas were satisfactory (0.70 or higher) for 12 of the 18 scales (Table III). Correlation coefficients between the psychosocial work-environment scales and work burnout were highest for job satisfaction (−0.51), quantitative demands (0.48), role conflict (0.44), and emotional demands (0.42); and lowest for job insecurity (0.11) and cognitive demands (0.14).

Participants who scored in the lowest quartile of work burnout had 6.0 days of sickness absence, while participants in the following quartiles had 6.9, 10.3, and 13.9 absence days per year, respectively (test for linearity: $p < 0.0001$).

Discussion

All three burnout scales of the CBI showed good internal consistency. Several occupational groups had high scores on either the work- or the client-related burnout scale, but not necessarily on both scales, indicating that a differentiation between these two types of burnout is justified. All scales on demands at work and the scale on role conflicts correlated positively with work burnout, whereas all scales on resources correlated negatively. As pointed out in the introduction, these associations do not establish causal associations, because of the cross-sectional nature of the data. However, the correlations indicate that it is worthwhile to pursue analyses of the impact of psychosocial work environment factors on burnout further, when prospective data are available. With regard to consequences of burnout, we found a linear association between burnout levels and numbers of sickness absence days. As with determinants of burnout, this does not

Table I. Characteristics of the PUMA study population at baseline.

Organization	Occupational group	Participants (n)	Response (%)	Contact with clients (%)	High demands from clients (%)	High rewards from clients (%)	Violence or threats (%)
Social security offices	Social workers	183		99.4	50.3	56.9	23.5
	Office assistants	72		54.2	41.3	41.5	6.9
	Consultants	48		65.2	45.0	55.0	4.2
	Supervisors	47		34.0	42.2	27.9	21.3
	Project workers	29		100.0	44.4	82.1	20.7
	Total	379	83.7	78.1	46.6	52.4	17.4
Psychiatric prison	Prison officers	140		98.6	34.3	30.2	40.0
	Prison professional workers	27		100.0	64.0	63.0	25.9
	Office assistants	21		52.4	20.0	25.0	0.0
	Supervisors	8		85.7	37.5	25.0	50.0
	Total	196	75.7	93.3	36.8	34.0	34.2
Institutions for severely disabled	Social care assistants	87		100.0	43.0	62.4	33.3
	Social care workers	86		98.8	43.5	69.8	37.2
	Temporary social assistants	67		100.0	41.8	74.2	22.4
	Supervisors	35		82.4	37.1	48.6	45.7
	Office assistants	32		86.7	12.0	69.0	9.4
	Total	307	74.0	96.3	39.6	66.1	30.9
Hospital, somatic	Nurses	189		100.0	38.9	92.6	13.8
	Auxiliary nurses	52		96.2	36.0	88.0	13.5
	Office assistants	47		78.7	34.0	61.4	0.0
	Midwives	41		97.6	73.2	92.7	2.4
	Senior doctors	37		100.0	62.2	94.6	5.4
	Head nurses	27		74.1	38.5	84.0	3.7
	Hospital doctors	20		100.0	80.0	90.0	25.0
	Total	413	84.1	95.1	45.6	88.2	10.2
	Hospital, psychiatric	Psychiatric staff	43	79.6	95.3	53.5	47.6
Homecare service, rural area	Homecare workers	207		100.0	24.4	82.0	23.7
	Office assistants	32		68.8	37.0	71.9	12.5
	Supervisors	28		78.6	29.6	89.3	21.4
	District nurses	25		100.0	25.0	91.7	4.0
	Total	292	87.2	94.5	26.2	82.4	20.5
Homecare service, urban area	Homecare workers	198		100.0	44.7	77.3	4.5
	Temporary home workers	29		100.0	34.5	85.7	13.8
	District nurses	26		100.0	16.0	96.2	7.7
	Supervisors	21		95.0	52.4	57.1	4.8
	Office assistants	10		80.0	70.0	70.0	0.0
	Total	284	74.0	98.9	42.5	78.1	5.6
PUMA total		1914	80.1	90.9	39.3	67.3	19.6

establish causality, but it encourages further prospective research.

A limitation of the study is the self-selection of the participating organizations. These organizations may represent very active workplaces in which both management and employees have an interest in reducing burnout. Therefore, we cannot assume that the organizations are representative of the human service sector in Denmark.

The participation rate at the baseline survey was high, with 80% overall and 74% to 87% for the different organizations respectively. Whereas this rate indicates a low likelihood of selection bias, we must

consider that people with high levels of burnout might have felt too exhausted to complete the questionnaire and therefore might be underrepresented among the responders. Furthermore, as in all work and health studies the so-called “healthy worker effect” should be considered; this means that people in the workforce are usually in better health (and may also have less burnout) than those who are not working. It is important to note that the purpose of PUMA is not to identify persons with very high levels of burnout, but to study determinants and changes in the level of burnout over time and to explore how burnout might impact on certain outcomes.

Table II. Copenhagen Burnout Inventory (CBI): Scales, items and response frequencies.

Response category	Always ^a Or To a very high degree ^b	Often or to a high degree	Sometimes or somewhat	Seldom or to a low degree	Never/almost never or to a very low degree	Missing	Score
Scoring:	100	75	50	25	0	n	Mean (SD)
	%	%	%	%	%		
Personal burnout (α 0.87)							
How often do you feel tired? ^a	2.6	27.6	49.4	17.9	2.5	24	52.5 (20.2)
How often are you physically exhausted? ^a	0.5	15.0	40.6	37.3	6.5	19	41.5 (20.7)
How often are you emotionally exhausted? ^a	0.5	11.7	37.3	38.9	11.6	17	37.7 (21.6)
How often do you think: "I can't take it any more?" ^a	0.3	5.4	18.6	39.3	36.4	19	23.5 (22.2)
How often do you feel worn out? ^a	0.5	12.4	35.7	38.4	13.0	19	37.3 (22.2)
How often do you feel weak and susceptible to illness? ^a	0.5	3.6	16.8	44.7	34.4	19	22.8 (20.8)
Total score							35.9 (16.5)
Work-related burnout (α 0.87)							
Do you feel worn out at the end of the working day? ^a	4.7	23.1	40.5	22.1	9.6	14	47.8 (25.2)
Are you exhausted in the morning at the thought of another day at work? ^a	0.8	5.6	24.1	34.2	35.3	12	25.6 (23.6)
Do you feel that every working hour is tiring for you? ^a	0.3	2.1	12.1	36.9	48.7	17	17.1 (19.6)
Do you have enough energy for family and friends during leisure time? ^a (inverse coding)	26.5	40.6	27.5	4.9	0.4	15	28.0 (21.8)
Is your work emotionally exhausting? ^b	4.9	13.3	43.1	29.5	9.1	15	43.9 (24.1)
Does your work frustrate you? ^b	3.8	10.5	36.9	33.9	14.9	24	38.6 (24.8)
Do you feel burnt out because of your work? ^b	3.5	7.3	27.5	36.4	25.2	19	31.9 (25.8)
Total score							33.0 (17.7)
Client-related burnout (α 0.85)							
Do you find it hard to work with clients? ^b	1.7	8.5	35.8	35.6	18.5	22	34.9 (23.5)
Does it drain your energy to work with clients? ^b	3.3	8.4	35.5	37.3	15.5	19	36.7 (24.1)
Do you find it frustrating to work with clients? ^b	0.7	3.0	20.7	43.5	31.9	18	24.3 (21.1)
Do you feel that you give more than you get back when you work with clients? ^b	4.7	13.9	32.8	32.7	15.9		39.8 (26.5)
Are you tired of working with clients? ^a	0.3	2.2	22.3	40.7	34.4	16	23.4 (20.7)
Do you sometimes wonder how long you will be able to continue working with clients? ^a	0.6	5.8	26.0	35.4	32.1	18	26.9 (23.3)
Total score							30.9 (17.6)

With regard to studying the effects of workplace interventions on burnout, the ideal design would have been a randomized controlled trial (RCT). As has been noted by others [29], RCTs are extremely difficult to conduct in work and health studies: PUMA is no exception. In the discussions with management and employees it became clear that the organizations were not willing to commit themselves

to the implementation of interventions, let alone to participate in a randomized trial. We therefore designed PUMA as a quasi-experimental study, in which interventions could be conducted at some workplaces, whereas workplaces without interventions would form the comparison group.

To summarize, PUMA has six important strengths:

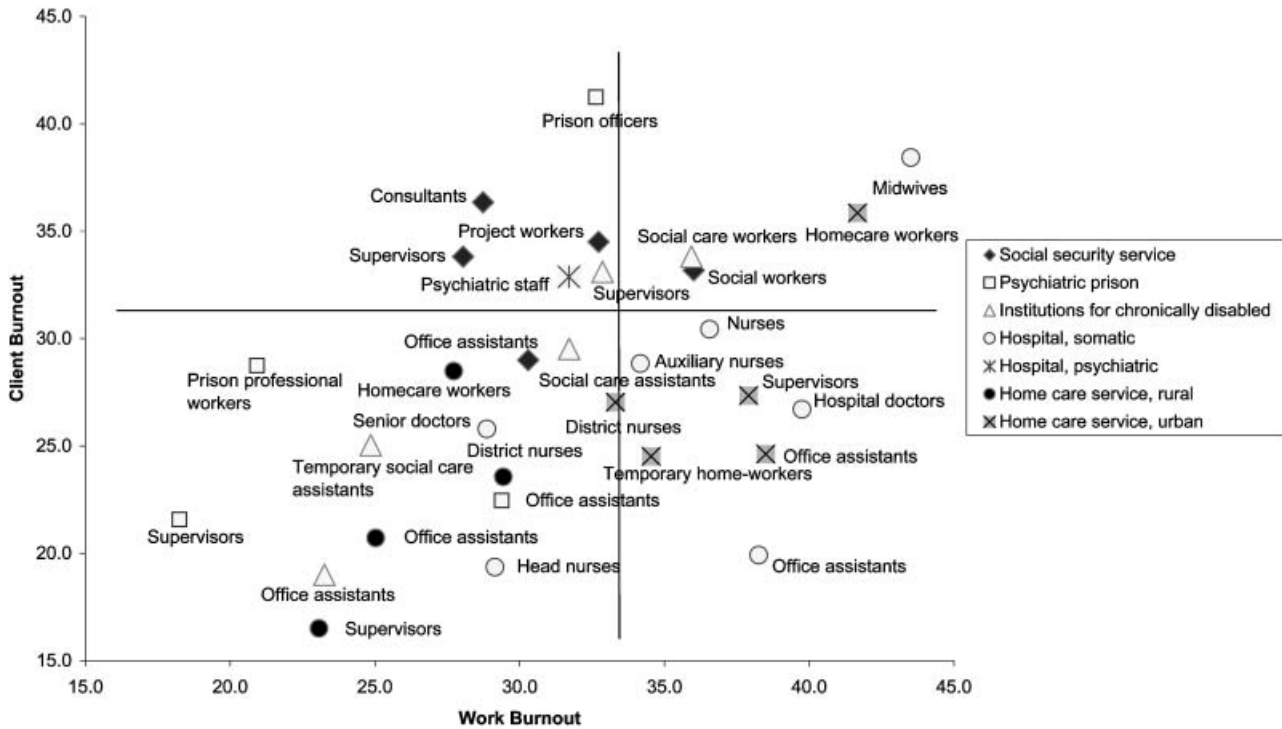


Figure 2. Work burnout and client burnout across occupational groups.

Table III. Psychosocial work environment scales: Internal consistency and correlations with work burnout.

Scale	Number of items	Cronbach's alpha	Spearman's rank correlation with work burnout
<i>Client-related demands:</i>			
Emotional demands	3	0.83	0.42
Demands for hiding emotions	2	0.46	0.35
<i>Other demands:</i>			
Quantitative demands	4	0.79	0.48
Cognitive demands	4	0.74	0.14
<i>Active and developmental work:</i>			
Influence at work	4	0.73	-0.24
Possibilities for development	4	0.75	-0.18
Meaning of work	3	0.78	-0.25
Commitment to the workplace	4	0.69	-0.27
<i>Interpersonal relations at work:</i>			
Quality of leadership	4	0.90	-0.35
Feedback at work	2	0.61	-0.17
Predictability	2	0.81	-0.33
Role clarity	4	0.84	-0.29
Role conflicts	4	0.72	0.44
Social support	2	0.58	-0.20
Social relations	2	0.54	-0.15
Sense of community	2	0.78	-0.28
<i>Job insecurity:</i>			
Job insecurity	4	0.57	0.11
<i>Job satisfaction:</i>			
Job satisfaction	4	0.71	-0.51

All correlations are significant at $p < 0.001$.

1. PUMA is a *prospective* study over five years following a number of different professions in different human service sectors.
2. PUMA includes *interventions* at the worksites based on the decisions and participation of the individual workplaces.
3. PUMA includes a number of *client-focused* variables such as emotional demands, demands from clients, rewards from clients etc.
4. PUMA also includes a number of other relevant *psychosocial work environment* factors.
5. PUMA makes it possible to study a number of potential consequences of burnout such as absence, turnover, use of medicine, exclusion from the labour market, morbidity, and mortality.
6. Finally, PUMA includes measures of personality, lifestyle factors, family-work conflict, and sociodemographic factors.

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