Time flies in primary care

A study on time utilisation and perceived
psychosocial work environment

Eva Anskär

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To Stefan, Camilla & Maria

Time is the most valuable thing a man can spend

(Theophrastus)

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ABSTRACT

Background: Time utilisation among primary care professionals has been affected by structural changes and reorganisation performed in Swedish primary care over several decades. The work situation is complex with a heavy administrative work load. The overall aim with this thesis was to describe time utilisation among staff in Swedish primary care and to investigate associations with perceived psychosocial work environment and legitimacy of work tasks.

Methods: A multicentre, descriptive, cross-sectional study design was used including all staff categories in primary care i.e. registered nurses, primary care physicians, care administrators, nurse assistants and allied professionals (physiotherapists, occupational therapists, psychologists, counsellors, dieticians, and chiropodists) at eleven primary care centres located in southeast Sweden. The data collection consisted of a questionnaire including a subjective estimate of workload, the Bern Illegitimate Tasks Scale (BITS) and the Copenhagen Psychosocial Questionnaire (COPSOQ). Also, a time study was performed, where the participants reported their work time based on three main categories; direct patient work tasks, indirect patient work tasks and other work tasks, each with a number of subcategories. The participants reported time spent on different work tasks, day by day during two separate weeks. Response rates were 75% for the questionnaire and 79% for the time study.

Results: In paper I the time study revealed that health professionals at the primary care centres spent 37% of their work time with direct patient work tasks. All professions estimated a higher proportion of time spent directly with patients than they reported in the time study. Physicians scored highest on the psychosocial scales of quantitative demands, stress and role conflicts. The proportion of administrative work tasks was associated with role conflicts, the more administration the more role conflicts. Findings in paper II were that more than a quarter of physicians scored above the cut-off value for BITS regarding unnecessary work tasks, which was significantly more than the proportion observed in all other professions in the survey. Across all staff groups, a perception of having to perform illegitimate work tasks was associated with experiencing negative psychosocial work environment and with high proportion of administrative-related work tasks.

Conclusions: Swedish primary care staff spend a limited proportion of their work time directly with patients and primary care physicians perceive the psychosocial work environment in negative terms to a greater extent than all other staff members. Allocation of work tasks has an influence on the perceived psychosocial work environment. The perception of having a large number of illegit-

imate work tasks affects the psychosocial work environment negatively, which might influence the perception the staff have of their professional roles. Perception of high proportion of unreasonable work tasks is associated with a high proportion of non-patient-related administration.

This thesis illuminates the importance of decision makers thoroughly considering the distribution and allocation of non-patient related work tasks among staff in primary care, in order to achieve efficient use of personnel resources and favourable working conditions. Hopefully, the results of this study will contribute to further development of primary care so that medical competence will benefit patients as much as possible.

SVENSK SAMMANFATTNING

Bakgrund: Under de senaste decennierna har det i svensk primärvård varit omfattande omorganisationer, vilket har påverkat arbetstidens innehåll. Arbetssituationen är komplex och omfattningen av administration har ökat. Det övergripande syftet med föreliggande studie var att beskriva arbetstidens innehåll bland personal i svensk primärvård och att undersöka samband mellan upplevd psykosocial arbetsmiljö och arbetsuppgifternas legitimitet.

Metod: Studien har genomförts som en deskriptiv multicenterstudie med tvärsnittsdesign och inkluderade sjuksköterskor, läkare, vårdadministratörer, undersköterskor och övriga professioner (fysioterapeuter, arbetsterapeuter, psykologer, kuratorer, dietister och fotvårdsspecialister) vid elva vårdcentraler i sydöstra Sverige. Studien inleddes med att deltagarna ombads att besvara ett frågeformulär vars första del bestod av en skattning av hur arbetsuppgifterna var fördelade. Frågeformuläret innehöll också frågor om illegitima arbetsuppgifter; Bern Illegitimate Tasks Scale (BITS) och psykosocial arbetsmiljö; Copenhagen Psychosocial Questionnaire (COPSOQ). Därefter gjordes en tidsstudie där deltagarna fick registrera tidsåtgången för olika arbetsuppgifter, varje dag under två separata veckor. Arbetsuppgifterna delades upp i tre huvudkategorier; direkt patientarbete, indirekt patientarbete och övrigt arbete. Varje huvudkategori hade flera underkategorier. Svarsfrekvensen var 75% för frågeformuläret och 79% för tidsstudien.

Resultat: Resultatet från delarbete I visar att personal i primärvård ägnade 37% av arbetstiden direkt med patienter. Alla professioner skattade den direkta patienttiden till större andel än vad tidsstudien visade. Läkare upplevde sämst psykosocial arbetsmiljö avseende kvantitativa krav, stress och rollkonflikter. Det förelåg ett samband mellan andelen administrativa arbetsuppgifter och rollkonflikter, ju mer administration desto mer rollkonflikter. I delstudie II visade resultatet att mer än en fjärdedel av läkarna upplevde en hög nivå av illegitima arbetsuppgifter avseende onödiga arbetsuppgifter, vilket var signifikant mer jämfört med andra professioner. För personalgruppen som helhet framträdde ett samband mellan upplevelsen av att ha mycket illegitima arbetsuppgifter och upplevelse av negativ psykosocial arbetsmiljö samt med hög andel administrationsrelaterade arbetsuppgifter.

Konklusion: Personal i primärvård ägnar en begränsad andel av arbetstiden åt direkt patientarbete och läkare upplever sämre psykosocial arbetsmiljö än övriga professioner. Arbetstidens fördelning mellan olika arbetsuppgifter påverkar den psykosociala arbetsmiljön. Upplevelsen av att utföra en stor andel illegitima arbetsuppgifter påverkar den psykosociala arbetsmiljön negativt, vilket kan ha inverkan på hur personalen uppfattar sin professionella roll. Upplevelsen av att ha

mycket oskäligen arbetsuppgifter har samband med hög andel icke patientrelaterad administration.

Avhandlingen belyser vikten av att beslutsfattare noga överväger fördelningen av icke patientrelaterade arbetsuppgifter bland personal i primärvård, för att möjliggöra effektiv användning av personalresurserna och för att främja goda arbetsförhållanden. Förhoppningen är också att studiens resultat ska bidra till fortsatt utveckling av primärvården så att den medicinska kompetensen kommer patienterna till nytta i så stor omfattning som möjligt.

LIST OF PAPERS

This thesis is based on two papers, which are referred to in the text by their Roman numerals.

- I. Anskär, E., Lindberg, M., Falk, M., Andersson, A. Time utilization and perceived psychosocial work environment among staff in Swedish primary care settings. *BMC health services research*. 2018;18(1):166.
<https://doi.org/10.1186/s12913-018-2948-6>
- II. Anskär, E., Lindberg, M., Falk, M., Andersson, A. Legitimacy of work tasks, psychosocial work environment, and time utilization among primary care staff in Sweden. 2018. (Submitted)

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ABBREVIATIONS

BITS	Bern Illegitimate Tasks Scale
COPSOQ	Copenhagen Psychosocial Questionnaire
CWB	Counterproductive Work Behaviour
DN	District Nurse
EHR	Electronic Health Record
GP	General Practitioner
NPM	New Public Management
NA	Nurse Assistant
PCP	Primary Care Physician
PCC	Primary Care Centre
PWE	Psychosocial Work Environment
RN	Registered Nurse

PREFACE

The journey towards this thesis started several years ago during my time as a district nurse (DN) in primary care. In my daily clinical work I felt and observed a gradual increase in the expression of frustration and stress among colleagues pointed towards the administrative burden. This inspired me to explore how the working time in Swedish primary care is allocated and if and how the distribution of work tasks influences working conditions. This was the starting point for this thesis.

The health care system in Sweden is governed by health care decision makers on different levels of the public administration influencing daily clinical work in primary care. That said, to my knowledge comprehensive studies regarding the actual utilisation of work time among primary health care staff have not been conducted in Swedish primary care. Neither have associations between time utilisation, psychosocial environment and perceived illegitimate work tasks been investigated.

BACKGROUND

In Sweden approximately 84% of the total health care sector is publicly funded [1]. Since the beginning of 2019 health care has been structured into 20 regions [2] serving the Swedish population of over 10 million. The regions are responsible for delivering both hospital care and primary care. Sweden has a total of seven university hospitals, 70 region-driven hospitals (including six private), and approximately 1200 primary care centres (PCCs), including private PCCs contracted by the regions [3]. The inhabitants can register at a PCC of their choice [4].

Statistics describing the total health care sector show a steady increase in the number of health care staff in Sweden [5]. In 1995 there were 1057 registered nurses (RNs) per 100 000 inhabitants and in 2015 the number had increased to 1254. Correspondingly, the number of physicians increased from 316 per 100 000 inhabitants in 1995 to 463 in 2015 [5], and then fell to 430 in 2017 [6]. In several other countries in the Western world in 2017 the corresponding figure was 345 physicians per 100 000 inhabitants [6]. The overall number of occupational therapists, physiotherapists, dieticians and psychologists has also increased in Sweden in recent years [5] while the overall number of nurse assistants (NAs) has decreased. In 1995 approximately 460 NAs per 100 000 inhabitants were working in the regions and in 2014 the number had decreased to 380 [7].

The overall number of care administrators increased from approximately 150 per 100 000 inhabitants during 1995 to 180 in 2005, and thereafter dropped to just below 160 in 2014. In parallel to the development among care administrators, there has been a general increase of administrators on higher levels in the organisations, for example developer and financial controllers [7].

Work tasks in primary care

According to the Swedish Health and Medical Services Act primary care is responsible for the delivery of such basic medical treatment, health care and preventive work and rehabilitation that does not require the medical facilities and technical resources provided at hospitals, or any other specialist competence [8]. Primary care accounted for approximately 19% of health care expenditure in 2015 [9]. The primary care costs increased by 3.2% during the years 2011-2015. However, the increase was significantly lower compared to a 6.6% increase in hospital and specialist care [10]. Despite the general increases in medical personnel resources in Sweden as a whole, issues of poor accessibility and long waiting times for diagnosis and treatment remain unresolved. This concerns both hospital care [11, 12] and primary care [7, 10].

Staff assigned to perform the core activities in primary care predominantly consist of RNs and primary care physicians (PCPs) [13]. Available statistics on the number of staff in Swedish primary care is inconclusive due to differences in definitions used by different sources [10]. However, according to statistics from 2017 the proportions of professions in primary care are approximately 36% RNs and 22% PCPs followed by 11% administrators, 15% NAs and 16% allied professionals [13]. The number of staff in primary care has decreased from 343 per 100,000 inhabitants in 2008 to 303 in 2017. The most notable changes concern RNs and NAs [14, 15], Table 1. In primary care there is currently a shortage of district nurses (DNs) [16] and physicians [7, 12, 17] (DNs are RNs with a specialist competence in primary care).

Table 1. Number of staff in primary care per 100,000 inhabitants in Sweden (Based on statistics from Statistics Sweden and Swedish Association of Local Authorities and Regions)

Professions	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Registered nurse	127	122	110	111	110	106	105	102	106	108
Physician	67	65	61	60	61	61	62	63	65	65
Care administrator	48	44	38	38	39	38	38	39	40	40
Nurse assistant	56	44	46	36	35	34	35	40	43	44
Allied professionals ^a	46	47	46	45	48	46	47	45	45	46
Overall	343	321	291	290	291	285	286	289	298	303

^aAllied professionals: physiotherapists, occupational therapists, psychologists, counsellors, dieticians

Patients' first contact with health care in Sweden is in general through primary care centres and often by telephone advice nursing [18]. The staff at PCCs performs a lot of different work tasks, among which the most important work task for all authorised medical staff at PCCs is to conduct medical assessments, face-to-face or over the phone. All information is documented into electronic health records (EHR). RNs have special clinics where they attend to patients with different chronic diseases. Telephone contacts with patients or their next of kin is also a common work task for RNs [19] where they give telephone advice, i.e. an assessment of patients' needs and responses to them [18]. Contrary to RNs who in general document in EHR by themselves, PCPs often dictate the medical information regarding each patient, which will be recorded into the EHR by a care administrator. This is the dominant work task for care administrators but, for example, they also serve on the reception at the PCC. NAs assist PCPs during examinations when needed, as well as managing equipment and other service work tasks. At some PCCs NAs carry out specialised clinics, for example for patients with hypertension, including documentation in the EHR. Within the primary care organisation allied professionals are also available; physiotherapists, occupational therapists, psychologists, counsellors and dieticians [20].

Key factors influencing work time utilisation

In order to understand the complexity of work time utilisation in Swedish primary care, a number of structural and organisational key factors of importance for how it is distributed need to be described. The underlying reasons or incentives for these structural or organisational factors are in turn complex, and cannot be explained or problematised by a separate theory or model. However, there are three principal perspectives that can be used to illuminate them, and some of the organisational changes that have been made over time; Firstly, the instrumental perspective, which is characterised by political decisions with defined goals and ambitions to reach the goals [21]; Secondly, the cultural perspective, through which organisations get characterised by a gradual development of informal, not necessarily reasonable or well-grounded norms, contrary to the above-described logic structure [21], and finally, in the third perspective, organisations may be influenced by norms which, sometimes called “myths” or “recipes”, tend to show up and gain a widespread societal or political popularity, often originating from completely different fields or organisations than the ones they get applied to. Interestingly, based on their success in its initial field of origin, these “myths” and “recipes” have a tendency to be considered as legitimate and effective solutions, even if this is not always the truth [21, 22]. As an example, New Public Management (NPM) can be seen as a number of “recipes”, often originating from private or industrial organisations, having the ambition to increase efficiency, i.e. to perform more using less resources [23]. However, although applicable in industrial settings, it cannot be taken for granted that they are applicable in healthcare organisations.

Keeping these three perspectives in mind, a number of central key factors of importance for time utilisation in Swedish primary care will here be described, as follows:

Factors associated with populational health care needs and staff workload

The number of elderly in the population is growing in Sweden as in many countries and people 80 years old (15% of the population) and above are the largest consumers of health care services (60%) [7, 24]. The prevalence of chronic disease is related to age and in Sweden 85% of the population over 65 has at least one diagnosed chronic disease and 66% have two or more [7]. This development has led to an increased workload among physicians in primary care, probably caused by more complicated and time-consuming visits to the PCCs. In spite of this, PCPs in primary care in Sweden spend a relatively small proportion of time face-to-face with patients compared to other countries in the Western world [24]. A major contribution to this disparity is probably increasing demands on documentation, in turn partly due to a simultaneous effort to increase patient safety and quality of care, which is only possible to achieve and monitor through accurate and consistent reporting. Another example of this, regarding PCPs, concerns the process of writing sickness certificates, which have been increasingly com-

mon in recent decades. This may be viewed as an expression of the instrumental perspective, by which national, politically decided health care goals within a certain field (i.e. sick leave) have driven PCPs to spend more of their work time on administrative tasks at the expense of face-to-face patient contact, possibly also affecting the perception of the work environment. Ljungquist et al. stated that PCPs in Sweden perceived handling sickness certifications as a greater problem compared to other specialties [25]. Workload among PCPs and RNs may also have increased due to the fact that the number of NAs in primary care has decreased [7]. During the last few years, there have been increasing difficulties in recruiting physicians to primary care in Sweden, which leads to a shortage of PCPs [7]. There have also been problems in recruiting RNs with specialist competence for primary care [16].

Work place organisation and interprofessional work distribution

How primary care is organised, on the individual unit level as well as in the community as a whole, differs between countries. In Sweden, there is a relatively low proportion of PCPs versus hospital physicians, compared to most other European countries. Inversely, RNs in Sweden have a generally wider responsibility and more advanced medical work tasks than elsewhere. The underlying reasons for this organisational divergence should probably be viewed mainly from the cultural perspective, rather than as an expression of an active political or evidence-based medical process. In the 20th century clinics led by RNs were established in primary care for several chronic diseases, e.g. diabetes, asthma/chronic obstructive pulmonary disease, hypertension and heart diseases. RNs were thereby given a broader medical responsibility, requiring additional training. Asthma nursing clinics has shown improved results regarding quality of the documentation, self-management and a reduction of asthma symptoms and it also has financial advantages [26]. Also, clinics led by RNs for patients with heart failure have shown positive results regarding, for example, a reduced number of hospital admissions [27]. However, the development added up to new administrative work tasks, including extended documentation in medical records.

In 1994, in order to release time for PCPs, DNs were given the right to prescribe certain medical drugs [28, 29]. Furthermore, political ambitions aiming at increasing accessibility to primary care [7] have also led to a redistribution of work tasks (in this case exemplifying the expression of an instrumental perspective) that RNs in primary care perform telephone advice nursing at PCCs for a considerable proportion of their work time. Previously open PCP practices, a.k.a. drop-in clinics, where patients did not need to have a scheduled appointment to see the PCP have been used to a greater extent, but a major change around the millennium was a switch from open PCP practice to telephone-based nurse triaging models. As a consequence, the proportion of time spent on the telephone by RNs has increased accordingly.

NAs as a professional group have decreased in Swedish primary care [7]. At the current time the Swedish job title *Undersköterska*, often translated as Nurse Assistant, is, in contrast to RNs and PCP, not regulated or protected and is not subject to qualification requirements [30]. NAs have, in spite of proportionally decreasing numbers, taken over certain of RNs work tasks, partially due to the fact that RNs perform telephone advice nursing. In other words, there has been a change in staff structure and work tasks between and among the RNs and the NAs [7].

Physiotherapists, occupational therapists, psychologists and dieticians are required to have a diploma, certificate or other evidence of formal qualification awarded by the Swedish National Board of Health and Welfare [20]. Each PCC has a numerically small number of these specific professions and often there is not a representative of all of them. This can vary greatly from place to place, partially due to the fact that health care is structured differently in different regions.

The number of administrators in the core activities at PCCs has decreased [31] and at the same time the administrative work tasks have increased [7, 31]. For example the volume of documentation has increased [31]. Due to the decreased number of administrators in core activities, there has also been a resultant shifting of administrative work tasks from administrators to medical professions [7, 31, 32]. Examples of these work tasks might be certain documentation in the EHR, copying of documents invoicing and other paperwork. However, the number of administrators at higher levels in the organisations, for example financial controllers and developers, has increased [7, 31].

Political and economic governance of health care resources

The instrumental perspective is reflected in a continuum of varying political reforms. *Lagen om husläkare*, which was introduced in 1993 [33], is a law giving citizens the right to a personal physician in primary care. Furthermore, another law, the 2008 Freedom of Choice Act, enabled citizens to choose their primary care provider [4]. The law represents one of the largest changes within the Swedish health care system, with its goal of enhancing efficiency in the overall system [34]. In these cases, organisational changes were based on the definition and formulation of specified goals. In other cases, organisational changes have rather been driven by the implementation of certain models or systems to achieve politically decided goals or to gain control over health care costs. Perhaps the most striking example is the entry of NPM, as mentioned before, which can be seen as an expression of the “myth” perspective. NPM includes, for example, management by objectives and public procurement. Management by objectives is often described as contradictory to governing with rules, away from bureaucracy and administrative management and has been a sort of indicator that NPM is introduced in a society [23]. Economic compensation to the provider is often based on diagnosis codes and different indicators of quality. This may have contributed to administrative work tasks at the expense of core patient work among staff.

Cooperation and communication between caregivers

The channels and procedures by which different health care providers communicate and cooperate have an important impact on work time utilisation. This includes accessibility of medical consultants, referrals between clinics and strategies to avoid duplicate work efforts (i.e. different providers doing the same thing without coordination or cooperation). Since about two decades ago, EHR have successively been introduced into the health care sector in Sweden and are an important tool in health care. In primary care in Sweden EHR were introduced in the mid-1990s which changed the documentation process for staff in primary care. The information in EHR facilitated monitoring and quality review of health care. The introduction of EHR in health care influenced how medical staff spend their time in several ways [35-37]. Examples are asynchronous alerts, requiring a large proportion of time to process [38], lack of interoperability between systems, need of time to learn multiple systems and several passwords staff have to remember [39]. Also, a risk for double documentation has been reported, i.e. different professions document the same information, but in different sections of the EHR [40]. Füchtbauer et al. point out a need to simplify documentation solutions in order to free more time for direct patient work [36].

TIME STUDIES

A study on time-use can be referred to a systematic description of sequential activities during specific time periods and time-use data reflects an underlying organisational structure [41]. Fredrick Taylor, whose ideas became known as *Taylorism*, observed use of resources as scientific management. His philosophy includes analyses and design of each task to achieve maximum efficiency [42]. Measuring time use data with diaries and protocols is considered normatively neutral, meaning the measuring is objective [41]. However, time studies can be performed using different methods and tools, for example by direct observation [43] or video recordings [44]. Another method for data collection is signals from a watch beeper with random intervals and the study participants register their activity at that specific moment [41]. Other examples are a method using a digital application measuring staffs movements [45] and by estimating the amount of time retrospectively through interviews or by means of a form [46].

Time studies in the health care sector have mostly been performed for hospital care, mainly among physicians. A systematic review by Tipping et al. including studies on physicians in hospital settings showed that they spent between 8.5 and 40.8% of their work time on direct patient care. However, these results were based on studies with no methodological standardisation [47]. Another study by Tipping et al. concluded that physicians in hospital actually spent more time on documenting in EHR than directly with patients [43]. This is in congruence with an observational study by Wenger et al., showing that internal medicine residents spent 52% of their work time on tasks indirectly related to patients and not more than 28% directly to patients [48]. An observational study performed in Australia showed that physicians at hospitals spent more time on documentation and administration, and less directly with patients [49]. One survey, where video recording was used to measure the time utilisation at hospitals, showed that RNs spent 21.5% of work time with direct patient work [44].

When it comes to primary care, Gottschalk & Flocke concluded in their study that physicians spent nearly one half of the work day outside the examination room, for example with documentation [50] and results from a survey performed in USA showed that a relatively small proportion of visit time among primary care providers was spent on hands-on care [51]. A Swedish report from 2009 showed that DNs in Swedish primary care used 51% of work time directly with patients and 30% with indirect patient work tasks i.e. documentation, consulting colleagues about patients, and patient-related transport. Furthermore, 19% was spent on other work tasks i.e. meetings at the work place, education, mentoring and pauses [19]. Studies of time use among other professions in primary care (except physicians and RNs) have not, to our knowledge, been performed.

PERSPECTIVES ON THE WORK ENVIRONMENT

The psychosocial environment at work comprises several perspectives, for example demands at work, job contents, interpersonal relations, work-family conflicts and health and well-being [52]. Role conflicts and qualitative demands are factors described as important predictors for job satisfaction [53].

An important factor is the role-stress approach due to the central position of, for example, role conflicts, role ambiguity and role expectations, lack of participation, responsibility for others, job future ambiguity and under-utilisation of skills and abilities. The job demand-control was a model firstly defined by two independent dimensions of stress; psychological demands and decision latitude (job control). A third dimension (social support) was added to the model. In conclusion, high-strain work is characterised by both high psychological demands and low job control, and also low support. The effort-reward imbalance model points out that lack of reciprocity between high-costs and low-gain can lead to emotional distress. Core factors of work motivation and enjoyment are influence at work, self-determination over work, overview and meaningfulness and, moreover, co-operation and fellowship. [54]

Influence at work is of great importance for well-being [53, 55] and improving psychosocial work environment (PWE) might prevent stress-related problems [56]. High job demands, low job control and low support from supervisors increase the risk of stress-related disorders [56]. Health care employees can perceive stress of conscience defined as stress due to a feeling of not being able to give patients adequate care, caused by lack of resources [57].

Psychosocial work environment

The work situation in the health care sector is complex and often stressful [24, 56, 58]. Time pressure, being exposed to interruptions and work overload are examples of stressors [38, 59, 60]. Being part of an unstable and inefficient work environment and staff shortages are other examples of stressors in health care [59]. Stressful and adverse working conditions in primary care have been reported among RNs [61, 62], PCPs [24, 63, 64] and NAs [63]. Adverse psychosocial working conditions are associated with poor quality of life among PCPs, RNs and NAs in primary care [63]. In one survey among RNs, NAs, physicians and physiotherapists at hospital, it was shown that physiotherapists perceived more job dissatisfaction than the other professions in the study [65]. A study among hospital workers including for example nurses and NAs showed that for example quantitative demands, emotional demands and role conflicts were significantly

associated with lower mental health [55]. The expression of ‘stress-pandemic’, which is mentioned by Junne et al., pointed out the importance of tackling stress among physicians, physiotherapists and managers in primary care [66].

Illegitimate work tasks

A work task is legitimate when it conforms to norms about what can be expected from a specific profession or person [67] and illegitimate if it is perceived as not being expected [68]. The starting point of the concept of illegitimate work tasks was an observation of work overload, which was related to, and typical for, a profession. Employees with a specific profession perceive stress as a result of not perceiving a specific work task as significant for them [68]. Perceiving work tasks as illegitimate can be seen as a degradation of one’s professional role and a feeling of being treated with disrespect [68, 69].

Illegitimate work tasks can also be associated with counterproductive work behaviour (CWB) directed towards specific people or the organisation [67]. The CWB can be, for example, attacking other people verbally or taking long breaks at work. Experience of having to perform illegitimate work tasks can be associated with stress [69], and has also been associated with inefficient and insufficient organisation [69]. An example of an illegitimate work task, perceived as stressful, is managing a computer breakdown caused by a perceived managerial error or poor decision making. However, a computer breakdown caused by a technical error can also be frustrating. Stressful work tasks that affirm the core identity of a professional are not considered illegitimate. On the contrary performing work tasks far from the core identity may also be perceived as illegitimate [68].

The concept of illegitimate work tasks, according to Semmer et al. [67, 68, 70], consist of two facets; unnecessary and unreasonable work tasks. Unnecessary work tasks are work tasks that would not have to be performed at all if things were better organised and unreasonable work tasks are tasks you perceive people in your profession or you personally should not perform [67, 68, 70]. A further example of unreasonable work tasks is when RNs perform service activities rather than nursing work tasks [68]. The facet unnecessary work tasks contains organisational inefficiencies, one example being when data has to be re-entered due to incompatibility between computer systems.

Administrative burden

The concept *administration* has its origin in Latin and is a composition of *ad* (to/for) and *ministratio* (give service). A tentative definition of administration might be: all producing, collecting, compilation, putting together, and reporting of information to stakeholders of different kinds in order to maintain, co-ordinate and manage an organised system of any sort over time and space. It can also be considered to encapsulate a great number of tasks, for example handling, ensur-

ing and managing [31]. There is a large proportion of administration in public organisations overall in Sweden and this is true in all parts of organisations. This concerns the health care sector as well as, for example, schools and the police force [31]. The administrative burden is often perceived as frustrating among staff in primary care and a report from 2016 showed that the frustration has increased over time [7]. However, significant amounts of administration are necessary in the health care sector [31]. For example, it is important to document how the responsibility for patient safety is distributed [71]. Staff are also obliged to maintain medical records, the main purpose of which is to contribute to safe, good quality care [72].

Rationale

Time studies in primary care in Sweden are scarce and the associations between time utilisation, psychosocial environment and perceived illegitimate work tasks have not been investigated before. This thesis contributes additional knowledge concerning how health care professionals in Swedish primary care spend their work time. The study also investigates associations between time utilisation, psychosocial environment and perceived illegitimate work tasks.

AIMS

Overall aim

The overall aim of this research was to describe time utilisation among staff in Swedish primary care and to investigate associations with perceived psychosocial work environment and legitimacy of work tasks.

Specific aims

- To investigate work time utilisation among different professionals in Swedish primary care and to explore associations between work time utilisation and the psychosocial work environment.
- To elucidate associations between the perceived legitimacy of work tasks, the psychosocial work environment, and the utilisation of work time among Swedish primary care staff.

METHODS

Study design

A multicentre, descriptive, cross-sectional study design was used, including eleven primary care centres (PCCs), located in four different regions in south-east Sweden. Two of the regions were, at the time of the data collection, defined as *county councils*, but since the beginning of 2019 they now have extended responsibility for regional development and are therefore now labelled as *regions*. The regions were Östergötland, Jönköping, Kalmar and Södermanland.

Setting

In total there were slightly over 150 PCCs in the whole geographical area at the time of the data collection and 23 of these were invited to participate. The selection was based on purposive sampling [73], with the aim of capturing a wide range of diversity including the PCCs size, geographical locations and urban or rural settings. Managers of the PCCs were contacted and informed and eleven managers approved participation (ten public and one private). Location of the PCCs was distributed as followed: five rural and six urban. The number of patients listed per PCC was between 6250 and 20 900, Table 2.

Table 2. Number of listed patients, staff and response rate per Primary Care Centre (PCC)

Listed patients	PCC 1 ^b	PCC 2 ^a	PCC 3 ^a	PCC 4 ^b	PCC 5 ^a	PCC 6 ^a	PCC 7 ^a	PCC 8 ^b	PCC 9 ^b	PCC 10 ^a	PCC 11 ^b
	14 000	10 065	19 630	7 400	15 800	20 150	9 327	6 250	6 920	11 330	20 900
Registered nurse	13	13	19	8	13	24	15	8	10	11	32
Primary Care Physician	17	7	15	5	12	14	8	7	4	7	13
Care administrator	7	5	7	3	8	9	5	2	5	6	18
Nurse assistant	5	1	4	3	7	2	4	3	3	2	12
Allied professionals	9	3	4	1	10	1	2	2	2	5	6
Overall	51	29	49	20	50	50	34	22	24	31	81
Response rate in part or throughout the study, n (%)	44(86)	28(97)	37(76)	16(80)	50(100)	38(76)	31(91)	19(86)	21(88)	30(97)	77(95)

^a Urban

^b Rural

All staff at the PCCs were invited to participate in the study, including registered nurses (RNs), district nurses (DNs) primary care physicians (PCPs), care administrators, nurse assistants (NAs) and allied professionals. RNs and DNs were, in the study, aggregated into one group named RNs. The group PCPs consisted of general practitioners (GPs) and physicians in training (ST-läkare/GP trainee and AT-läkare/foundation doctor). These were also aggregated into one group. Physiotherapists, occupational therapists, psychologists, counsellors, dieticians and chiropodists were merged together into one group named allied professionals. The data collection took place from March 2014 to February 2015.

Data collection

An overview of the data collection is illustrated in Figure 1.

Figure 1. Overview of data collection

Questionnaire

First, a questionnaire was distributed to all staff members (n=441) at the PCCs by e-mail with the web-based tool, Publech Survey 5.7 and one reminder was sent after two weeks. In the first section of the questionnaire, the participants were asked to estimate the proportion of their time spent on different work tasks; direct patient work tasks, indirect patient work tasks and other work tasks. Examples of work tasks were given for each of these categories.

Secondly in the questionnaire participants were asked to answer the validated and reliability tested Bern Illegitimate Tasks Scale (BITS) [67, 70, 74] and also the validated and reliability tested Copenhagen Psychosocial Questionnaire (COPSOQ) [52, 55, 75-77]. Several of factors described earlier in perspectives on work environment are measured by COPSOQ.

BITS

The BITS consisted of eight items, four items regarding the facet *unnecessary* work tasks and four items regarding *unreasonable* work tasks. Unnecessary work tasks are defined as work tasks that would not be performed at all if things were better organised and unreasonable work tasks are work tasks beyond one specific profession or person. All items had five response options on a Likert-type scale ranging from 1 (never) to 5 (frequently) [67, 78] , Appendix 1.

COPSOQ

The COPSOQ questionnaire instrument is constructed so that researchers are allowed to select the scales appropriate for the aim of the study. For this study, the selected scales were quantitative demands (4 items), stress (4 items), role conflicts (4 items), quality of work (3 items), conflicts between work and personal life (4 items) and positive impact of work on personal life (2 items) [76]. The two scales ‘quality of work’ and ‘positive impact of work on personal life’ were not part of the original COPSOQ, but were added by the creators of the COPSOQ for inclusion in studies performed in the health care sector. The scales quantitative demands, stress, role conflicts and quality of work had five response options scored from 0 to 100, i.e. 0, 25, 50, 75 and 100. The scales conflict between work and personal life and positive impact from work on personal life had four response options scored from 0 to 100, i.e. 0, 33.3, 66.7 and 100, Appendix 1.

Time study

After the questionnaire a time study was performed with a time study form, partly inspired by two other time studies in Sweden [19, 79] and developed specifically for this study in Swedish primary care. The form was delivered on hard copy or digitally and the participants could choose which one they preferred. On the form participants recorded the time (min) they spent on each work task, every hour, every day over two separate weeks, Monday to Friday, during office hours. The form contained three main

categories of work tasks; direct patient work tasks, indirect patient work tasks and other work tasks and a number of subcategories for each main category. The category direct patient work tasks comprised work tasks where staff have direct communication with patients, face-to-face in the same room or telephone contact with patients or patients' next-of-kin. Indirect work tasks comprised tasks closely related to patient contact, while the patients are not in attendance. Examples are documentation, referral management, drug management, patient-related transport, contact with other caregivers about patient cases and prescription of medical drugs or medical aids and contacts with authorities. Other work tasks are tasks not related to specific patient cases, but closely related to the activity in general at the PCC. Examples are meetings at or outside the work place, scheduling, managing e-mails, receiving and performing mentoring, managing computer problems and managing equipment and facilities. Pauses were included in other work tasks, except for lunch breaks as they do not count as paid work time. Within every main category of work tasks there was one category called remaining tasks, where the participants could record work tasks not suitable for any of the prescribed options. Prior to the main study the time study form was validated by two experts (a PCP and a RN). The time study form is included as an appendix at the end of the thesis, Appendix 2.

The participants were given a pamphlet with instructions on how to complete the time study form. In total in the collected data 202 office hours were excluded, due to incorrect reporting or illegibility; these were classified as internal drop-out.

Statistical analyses

The responses were categorised by profession and age. Age is expressed as the mean, range (min-max), and standard deviation (SD), for each profession and the entire study sample.

Paper I

The mean estimated proportions of time spent on work tasks (direct patient work tasks, indirect patient work tasks and other work tasks) were calculated and compared to the self-reported time use (direct patient work tasks, indirect patient work tasks and other work tasks) in the time study. A paired t-test was used to compare self-estimated and self-reported time use. Descriptive statistics were used to calculate mean score and standard deviation (SD) of COPSOQ scales. The total score for a scale was calculated as the mean of scores for the individual items in that scale. A difference of 5 in the mean value was defined as a clinically significant change for each scale [76]. A high score on the scales 'quantitative demands', 'stress', 'role conflicts' and 'conflicts between work and personal life' indicated a negative PWE. A high score on the scales 'quality of work' and 'positive impact of work on personal life' indicated a positive PWE.

Descriptive statistics were used to present proportions of means and ranges (min-max) of each work task category: direct work tasks, indirect patient work tasks and other work tasks and all the subcategories.

The means and SD of COPSOQ were compared between professions with the analysis of variance (ANOVA) and post-hoc Tukey test. Pearson's r correlation was used to analyse associations between COPSOQ scales and proportions of time spent on different work tasks and associations between COPSOQ scales and age. A two tailed p -value ≤ 0.05 was considered statistically significant.

Paper II

The two scales of illegitimate work tasks (BITS), unnecessary work tasks (item 1-4) and unreasonable work tasks (item 5-8), were dichotomised into scores above or below cut-off values, which distinguished between perceived legitimate work tasks (below the cut-off) and illegitimate work tasks (above the cut-off). The cut-off value was decided to mean value >3.5 in both scales [78]. Descriptive statistics were performed to calculate the frequencies of staff members with scores above or below the cut-off value for a high level of illegitimate work tasks in both facets of BITS. Chi-square tests were used to analyse the significance of differences between professions in their response to items in both facets.

Logistic regression was used to evaluate the association between perceived unnecessary work tasks and the COPSOQ scales and the association between perceived unreasonable work tasks and the COPSOQ scales. Logistic regression was also used to evaluate the association between perceived unnecessary work tasks and the proportions of different work tasks and between perceived unreasonable work tasks and the proportions of different work tasks. Analyses were adjusted for profession, age, and gender. The results from the logistic regressions were expressed as odds ratios (OR) with 95% confidence intervals (CI).

Statistical analyses were performed with the Statistic Package of Social Sciences (SPSS) version 22.

ETHICS

The study followed the ethical principles regulated by the Declaration of Helsinki and was approved by the Regional Ethical Board at Linköping University (D. nr. 2014/81-31). Participants received verbal information about the study at staff meetings as well as written information, delivered at the start of the data collection. Participants were informed that the study was voluntary, that they could drop out of the study at any time without any explanation, and that confidentiality was guaranteed. Participants agreed to participate by responding to the questionnaire and by participation in the time study. All data were stored in a database in Region Östergötland with a high level of security. The participants were informed that the collected data would only be used in the research study and they were ensured that it would not be used to control their work or for any other purpose. In spite of this, the participants may have experienced some inconvenience or discomfort. However, the participation in the study was voluntary so the risk is considered to be small. The survey may also have been somewhat time-consuming for the participants.

RESULTS

Of the 441 individuals invited to participate, 391 participated, partially or in all parts of the study. Thus, the response rate for participation in the study, partially or in all parts of the study was 89%. Response rate for the PCCs was from 76% (minimum) to 100% (maximum). Mean age of the participants was 50 with a range of 22-70 and the majority were women. Response rate for the time estimate was 76%, for the BITS and COPSOQ questionnaire 75% and for time study 79%, Table 3.

The result are reported for paper I and paper II separately, and the result of the entire questionnaire (mean for BITS scales and mean for COPSOQ scales, by profession and totally) is presented in an appendix, Appendix 3.

Table 3. The professions and mean ages of participants in the study (study sample), and the numbers of individuals in each profession that completed each study section

Professions	Study sample			Self-estimate of work time		Illegitimate work tasks (BITS)		PWE ^a (COPSOQ)		Time study, self-reported	
	n (%)	Mean age ^b , years	(min-max)	(SD)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Registered nurse	148 (38)	52	(22-67)	(9.6)	129 (87)	127 (86)	127 (86)	127 (86)	139 (94)		
Primary care physician	86 (22)	46	(28-70)	(11.7)	63 (73)	63 (73)	63 (73)	63 (73)	75 (87)		
Care administrator	70 (18)	49	(26-66)	(11.2)	66 (94)	65 (93)	65 (93)	65 (93)	61 (87)		
Nurse assistant	44 (11)	54	(33-67)	(8.7)	35 (80)	35 (80)	35 (80)	35 (80)	42 (95)		
Allied professionals	43 (11)	47	(24-65)	(12.4)	40 (93)	40 (93)	40 (93)	39 (91)	33 (77)		
Total sample	391 (100)	50	(22-70)	(10.9)	333 (85)	330 (84)	329 (84)	329 (84)	350 (90)		

^aPsychosocial Work Environment

^bDoes not add up to the total sample due to internal drop out, n=337

Paper I

Time estimate and self-reported time use

The estimate of work tasks differed from the self-reported time use. All professions estimated that they spent a greater proportion of time on direct patient work tasks than the proportion recorded in the time study. Conversely, the estimated proportion of time spent on other work tasks was lower than the proportion recorded in the time study, Table 4.

The time study showed that direct patient work tasks took up 37.2%; indirect patient work tasks 30.9% and other work tasks 32.9% of the total work time. RNs had the largest share of direct patient work tasks (42.6%), followed by allied professionals (40.8%), NAs (40.4%) and PCPs (35.9%). PCPs spent 81.8% of their direct patient work time on working face-to-face with patients. RNs spent 42.6% of their direct patient work time on telephone consultations with patients or patients' next-of-kin.

Care administrators had the largest share of indirect patient work tasks (45.3%), followed by PCPs (34.1%). Indirect patient work tasks were dominated by documentation, overall 45.9% of indirect patient work tasks was documentation. NAs had the largest share of other work tasks (41.4%), compared to RNs, PCPs and allied professions, who had approximately 30% each. Table 5 shows detailed information of all self-reported work tasks, Table 5.

Table 4. Comparisons^a between self-estimated and self-reported proportions of time spent on work tasks

Professions	Direct patient-related work tasks					Indirect patient-related work tasks					Other work tasks				
	Self-estimated		Self-reported		p-value	Self-estimated		Self-reported		p-value	Self-estimated		Self-reported		p-value
	n	%	%	CI for difference in mean		n	%	%	CI for difference in mean		n	%	%	CI for difference in mean	
Registered nurse	120	54.5	42.2	9.5-15.2	<0.001	119	27.6	27.2	-2.1-2.8	0.750	120	18.7	30.9	14.4-9.9	<0.001
Physician	52	42.9	34.4	4.7-12.3	<0.001	52	35.7	32.3	0.3-6.4	0.031	52	21.3	33.3	17.1-6.9	<0.001
Care administrator	49	22.8	20.3	-1.7-6.6	0.238	56	57.9	44.8	7.3-18.8	<0.001	57	21.3	38.5	22.6-11.8	<0.001
Nurse assistant	33	53.5	40.2	7.3-19.3	<0.001	33	22.5	18.5	-0.7-8.7	0.092	33	22.6	41.4	22.8-14.8	<0.001
Allied professionals	31	58.0	40.5	11.0-24.1	<0.001	31	22.4	27.0	-8.6 to -0.6	0.025	31	16.8	32.5	21.1-10.3	<0.001
Overall	285	47.2	36.6	8.7-12.5	<0.001	291	33.7	30.5	1.4-5.0	<0.001	293	19.9	34.2	16.0-12.4	<0.001

^aPaired t-test

The sum of percent does not add up to exactly 100 due to the fact that all participants do not have all categories of work tasks.

Table 5. Self-reported proportions of time spent on main- and sub-categories of work tasks by profession. The sum of percent does not add up to exactly 100, due to the fact that all participants do not have all categories of work tasks

Work tasks	Overall			Registered nurse			Primary care physician			Care administrator			Nurse assistant			Allied professionals		
	n	%	(min-max)	n	%	(min-max)	n	%	(min-max)	n	%	(min-max)	n	%	(min-max)	n	%	(min-max)
Direct patient-related work tasks																		
Face-to-face contact with patients	342	37.2	(0.1-84.0)	139	42.6	(2.0-84.0)	75	35.9	(3.8-61.1)	53	19.9	(0.1-66.4)	42	40.4	(15.7-83.0)	33	40.8	(21.0-67.5)
Telephone contact with patients		73.1	(0-100)		55.2	(0-98.3)		81.8	(63.7-100)		84.6	(0-100)		90.0	(24.4-100)		88.8	(71.9-100)
Telephone contact with patients' next of kin		22.4	(0-100)		39.8	(0-100)		15.9	(0-31.4)		8.5	(0-100)		4.6	(0-19.9)		9.2	(0-22.8)
Remaining tasks		2.5	(0-66.5)		2.2	(0-45.4)		1.2	(0-18.6)		3.8	(0-55.6)		5.0	(0-66.5)		1.3	(0-14.2)
Indirect patient-related work tasks																		
Documentation health care records, order tests	348	30.9	(0.1-88.7)	138	27.6	(1.4-56.4)	75	34.1	(6.5-62.6)	60	45.3	(0.1-88.7)	42	18.2	(0.8-46.1)	33	27.8	(14.8-51.9)
Reading health care records		45.9	(0-100)		51.6	(12.5-100)		11.9	(0-59.6)		76.4	(0-100)		41.0	(0-94.0)		49.9	(11.4-83.2)
Contact with other caregivers about patient cases		11.8	(0-58.8)		13.3	(0-58.8)		16.8	(0.5-46.6)		0.9	(0-26.8)		8.6	(0-39.8)		17.8	(0-53.2)
Dictation		8.2	(0-100)		9.6	(0-37.8)		9.8	(0-31.5)		4.3	(0-100)		8.1	(0-60.7)		5.7	(0-26.7)
Administering appointments		6.1	(0-75.1)		1.0	(0-19.6)		24.0	(4.1-75.1)		0.6	(0-21.9)		0.7	(0-11.4)		3.7	(0-35.8)
Signing		5.6	(0-100)		6.8	(0-50.0)		0.9	(0-4.7)		5.5	(0-100)		9.8	(0-100)		6.3	(0-46.9)
Referral management		4.3	(0-55.7)		3.2	(0-19.6)		13.0	(0-55.7)		0.03	(0-1.1)		0.4	(0-4.9)		1.7	(0-15.3)
Handle mailings		2.6	(0-21.9)		1.5	(0-14.4)		5.5	(0-15.3)		1.7	(0-16.2)		0.9	(0-8.1)		4.0	(0-21.9)
Prescribing of medical drugs		2.2	(0-29.2)		1.3	(0-41.7)		2.8	(0-13.8)		3.8	(0-100)		2.6	(0-32.6)		0.9	(0-10.6)
Entering data into healthcare records and quality registries		2.2	(0-29.2)		0.4	(0-6.5)		9.2	(0-29.2)		0.3	(0-5.7)		0.04	(0-1.6)		0.4	(0-6.3)
Drug management		1.1	(0-35.8)		2.1	(0-35.3)		0.2	(0-2.7)		0.6	(0-8.5)		1.3	(0-24.2)		1.0	(0-18.3)
Patient related transports		1.1	(0-26.7)		2.0	(0-35.8)		0.8	(0-10.5)		0.4	(0-17.1)		0.4	(0-5.1)		0.03	(0-1.0)
Prescription of medical aids		0.9	(0-25.4)		1.7	(0-26.7)		0.8	(0-8.4)		0.0	(0-0)		1.2	(0-23.6)		1.0	(0-16.5)
Contact with authorities		0.6	(0-18.3)		0.5	(0-7.9)		0.3	(0-13.1)		0.0	(0-0)		0.4	(0-10.7)		0.2	(0-2.3)
Remaining tasks		6.4	(0-100)		3.2	(0-34.4)		3.2	(0-40.8)		5.2	(0-73.5)		24.5	(0-100)		1.7	(0-18.3)
Other work tasks																		
Meetings at work place	350	32.9	(3.5-99.3)	139	30.0	(3.5-98.0)	75	30.0	(11.1-89.6)	61	38.2	(0.9-99.3)	42	41.4	(14.1-77.0)	33	31.4	(6.1-52.4)
Pauses		21.0	(0-77.1)		23.4	(0-67.9)		24.6	(0-64.3)		18.7	(0-77.1)		14.2	(0-35.7)		16.1	(0-59.4)
Other writing tasks/administration		19.7	(0-100)		23.4	(0-78.5)		13.7	(0-42.4)		21.6	(0-65.7)		16.0	(4.3-35.8)		18.7	(1.2-100)
Continuing education		15.9	(0-84.2)		14.4	(0-51.8)		6.3	(0-84.2)		32.4	(0-79.8)		16.8	(0-40.0)		11.7	(0-51.0)
Managing equipment and facilities, non-computer related		10.2	(0-100)		8.3	(0-62.8)		21.6	(0-90.9)		4.8	(0-100)		2.4	(0-55.2)		12.9	(0-61.9)
Managing e-mails		6.5	(0-55.6)		5.6	(0-41.4)		0.4	(0-10.1)		1.6	(0-17.9)		27.8	(0-55.6)		6.1	(0-38.8)
Recieve and give mentoring		5.5	(0-47.0)		6.1	(0-26.9)		4.6	(0-15.9)		5.1	(0-26.5)		4.3	(0-16.2)		7.7	(0-47.0)
Meetings outside work place		3.5	(0-63.7)		2.1	(0-36.2)		10.0	(0-63.7)		0.5	(0-7.5)		0.8	(0-8.4)		3.6	(0-41.1)
Waiting, non-computer related		3.4	(0-61.3)		3.3	(0-33.1)		4.6	(0-61.3)		2.4	(0-21.3)		1.6	(0-19.2)		5.9	(0-37.4)
Scheduling		2.0	(0-37.3)		2.4	(0-23.6)		1.6	(0-21.5)		0.4	(0-9.3)		3.6	(0-37.3)		1.9	(0-20.3)
Managing computer problems		1.6	(0-57.1)		1.4	(0-18.2)		2.2	(0-57.1)		2.0	(0-40.5)		1.1	(0-11.2)		0.9	(0-7.7)
Non-patient related transports		1.3	(0-28.3)		1.0	(0-22.2)		1.5	(0-28.3)		2.2	(0-20.8)		1.1	(0-6.7)		0.9	(0-8.8)
Ordering medical supplies, including laundry		0.9	(0-18.3)		0.8	(0-14.3)		1.0	(0-15.3)		0.2	(0-6.4)		0.5	(0-12.1)		2.5	(0-18.3)
Non-patient related telephone contacts		0.7	(0-23.0)		0.3	(0-6.5)		0.01	(0-0.5)		0.6	(0-23.0)		3.9	(0-12.1)		0.4	(0-5.6)
Remaining tasks		0.6	(0-20.5)		0.6	(0-9.0)		0.5	(0-20.5)		0.6	(0-6.0)		0.5	(0-3.0)		0.9	(0-13.6)
Remaining tasks		7.3	(0-40.0)		7.1	(0-40.0)		7.5	(0-37.8)		7.1	(0-27.5)		5.6	(0-26.0)		10.0	(0-38.9)

Table 6 shows the proportions of administrative and service-related work tasks. Overall 41.5% of the total work time was spent on administrative and service work tasks.

Table 6. Proportions of time spent on administrative and service work tasks, by profession

Professions	Patient-related administration ^a		Organisation-related administration and service ^b		Total administration and service ^{a, b}	
	n	%	n	%	n	%
Registered nurse	138	18.9	139	17.3	138	35.7
Primary care physician	75	22.9	75	12.5	75	35.4
Care administrator	58	43.5	60	27.5	57	68.1
Nurse assistant	41	10.3	42	29.8	41	40.3
Allied professions	33	18.9	32	16.0	32	34.4
Overall	345	22.9	348	19.4	343	41.5

^aPatient-related administration included: documentation, dictation, administering appointments, signing, referral management, handling mailings, prescribing medical drugs, entering data into health care records and quality registers and prescribing of medical aids

^bOrganisation-related administration and service included: meetings at work place, other writing tasks/administration, managing equipment and facilities, managing e-mails, meetings outside work place, scheduling, managing computer problems, ordering medical supplies including laundry and non-patient related telephone contacts

Psychosocial work environment

The mean COPSOQ scores showed that PCPs reported higher scores for quantitative demands, stress, role conflicts, and conflicts between work and personal life, compared to other professionals. All professions perceived quality of work as good or very good. The mean score for role conflicts, stress and conflicts between work and personal life were significantly different between PCPs and all other professionals, Table 7.

Table 7. Scores for psychosocial factors measured with the COPSOQ questionnaire, according to profession

Professions	n	Quantitative demands ^a		Stress ^b		Role conflicts ^b		Quality of work ^c		Conflicts between work and personal life ^b		Positive impact of work on personal life ^c	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Registered nurse	124	47.7	19.4	31.9	18.0	25.0	17.7	77.2	12.3	28.0	25.7	57.7	23.4
Primary care physician	63	61.1	22.1	41.2	19.1	37.2	18.2	78.2	11.9	49.2	31.4	59.0	26.8
Care administrator	63	44.3	17.9	32.2	19.4	24.8	19.9	78.6	11.7	18.1	19.3	51.6	27.6
Nurse assistant	35	34.8	13.3	27.3	17.0	22.5	18.7	80.0	15.4	14.8	16.4	56.7	25.3
Allied professionals	39	51.3	20.9	32.9	19.6	24.7	18.4	78.4	14.0	30.6	28.9	62.8	23.4
Overall	324^a	48.7	20.6	33.4	18.9	27.0	19.0	78.1	12.6	29.1	27.6	57.3	25.2
Reference value		40.2		26.7		42.0		^d		33.5		^d	

All scores are expressed as the mean and standard deviations (SD); scores were transformed to a scale of 0 to 100

^aParticipants who did not answer all questions were excluded

^bLow value positive

^cHigh value positive

^dReference value not available

When studying correlations between psychosocial work environment (COPSOQ) and time allocation, results showed that the strongest correlation was found among allied professionals, in that case between perceived role conflicts and the proportion of time spent on total administration and service work. Thus, the more time spent on administration and service work tasks, the more role conflicts were reported. Among RNs, a negative correlation was observed between role conflicts and the proportion of time spent on direct patient work tasks. Thus, the less time spent on direct patient work tasks, the more role conflicts were reported. Regarding age, the strongest correlation was observed among NAs; the younger, the more stress, Table 8.

Table 8. Correlations between COPSOQ scores and proportions of time spent on work tasks and age^a

Professions	Role conflicts and total administration and service			Role conflicts and patient-related administration			Quantitative demands and total administration and service			Role conflicts and direct patient work tasks			Role conflicts and age			Stress and age		
	n	r-factor	p-value	n	r-factor	p-value	n	r-factor	p-value	n	r-factor	p-value	n	r-factor	p-value	n	r-factor	p-value
Allied professions	29	0.566	0.001	29	0.432	0.019	29	0.168	0.385	29	-0.193	0.315	39	0.394	0.013	39	-0.106	0.519
Primary care physician	52	0.299	0.031	52	0.199	0.157	52	0.293	0.035	52	-0.093	0.511	63	0.081	0.526	63	^b0.254	0.045
Registered nurse	116	0.110	0.242	116	0.020	0.829	117	0.128	0.169	117	^c-0.184	0.047	125	0.212	0.018	125	0.132	0.143
Care administrator	51	0.144	0.314	52	0.128	0.365	52	0.183	0.195	47	0.207	0.163	63	0.192	0.132	63	0.105	0.412
Nurse Assistant	32	0.070	0.702	32	0.084	0.646	32	0.235	0.195	33	0.004	0.984	35	0.357	0.035	35	0.425	0.011
Overall	280	0.050	0.403	281	0.038	0.531	282	0.027	0.657	278	-0.080	0.183	325	0.245	<0.001	325	0.175	0.002

^aPearson's correlation; ^bThe younger the staff member, the more role conflicts reported; ^cThe younger the staff member, the more stress reported; ^dThe less time spent on direct patient work tasks, the more role conflicts reported

Paper II

More than a quarter of PCPs scored above the cut-off value regarding unnecessary work tasks, which was significantly more ($p<0.001$) than the proportion observed among all other professions. For both PCPs and RNs 8% scored above the cut-off value regarding unreasonable work tasks. Ten participants scored above the cut-off values for both unnecessary and unreasonable work tasks, four RNs, five PCPs and one allied professional, Table 9.

Table 9. Numbers of staff members that perceived illegitimate work tasks above cut-off values for unnecessary and unreasonable work tasks

Professions	Illegitimate work tasks (BITS)			
	Unnecessary work tasks above cut off value ^a		Unreasonable work tasks above cut off value ^b	Unnecessary and unreasonable work tasks above cut off value ^{a, b}
	n	n (%)	n (%)	n (%)
Registered nurse	127	12 (9)	10 (8)	4 (3)
Primary care physician	63	17 (27)	5 (8)	5 (8)
Care administrator	65	3 (5)	1 (1.5)	0 (0)
Nurse assistant	35	2 (6)	0 (0)	0 (0)
Allied professionals	40	2 (5)	1 (3) ^c	1 (2.5)
Overall	330	36 (11)	17 (5)	10 (3)

^aUnnecessary work tasks to a high degree

^bUnreasonable work tasks to a high degree

^cCalculated on 39 due to internal drop out from this professional category

Across all staff groups illegitimate work tasks were significantly associated with low PWE in the COPSOQ scores. There was a positive association between perceived role conflicts and scores above the cut-off for unreasonable work tasks (OR 1.11); i.e., higher frequencies of perceived unreasonable work tasks were associated with higher frequencies of role conflicts. Stress was also significantly positively associated with the perception of unreasonable work tasks (OR 1.06). In contrast, quality of work was significantly negatively associated with unnecessary work tasks (OR 0.94); i.e., higher work quality corresponded to lower frequency of perceived unnecessary work tasks. Similarly, quality of work was significantly negatively associated with unreasonable work tasks (OR 0.95); i.e., higher work quality corresponded to lower frequencies of perceived unreasonable work tasks, Table 10.

Table 10. Associations between illegitimate work tasks (scores above the cut-off value) and the psychosocial work environment, n=329

Psychosocial work environment (COPSOQ)	Illegitimate work tasks (BITS)							
	Unnecessary work tasks above cut off value				Unreasonable work tasks above cut off value			
	n ^a	OR	(95 % CI)	p-value	n ^a	OR	(95 % CI)	p-value
Role conflicts ^b	325	1.07	(1.05-1.10)	<0.001	324	1.11	(1.06-1.16)	<0.001
Quantitative demands ^b	328	1.03	(1.01-1.05)	0.002	327	1.03	(1.01-1.06)	0.017
Stress ^b	325	1.04	(1.02-1.06)	<0.001	324	1.06	(1.03-1.09)	<0.001
Quality of work ^c	326	0.94	(0.91-0.97)	<0.001	325	0.95	(0.91-0.99)	0.019
Conflict between work and personal life ^b	325	1.02	(1.01-1.04)	<0.001	324	1.04	(1.02-1.06)	<0.001
Positive impact of work on personal life ^c	325	0.99	(0.971-0.999)	0.035	324	1.00	(0.98-1.02)	0.930

OR: Odds ratio; CI: confidence interval; COPSOQ: Copenhagen Psychosocial Questionnaire; Regression analyses were adjusted for profession age and gender

^aNumbers may not reflect the total, due to participants dropping out

^bA low value is a positive rating

^cA high value is a positive rating

High score for perceived unreasonable work tasks was significantly negatively associated with self-reported proportion of direct patient-related work tasks (OR 0.93); i.e., a higher frequency of direct patient-related work tasks corresponds to a lower frequency of unreasonable work tasks, Table 11.

Table 11. Associations between illegitimate work tasks above the cut-off value and different work tasks, n=290

Self-reported work tasks	Illegitimate work tasks (BITS)							
	Unnecessary work tasks above cut off value				Unreasonable work tasks above cut off value			
	n ^a	OR	(95 % CI)	p-value	n ^a	OR	(95 % CI)	p-value
Direct patient-related work tasks	280	0.98	(0.95-1.01)	0.216	279	0.93	(0.89-0.98)	0.003
Indirect patient-related work tasks	286	1.01	(0.98-1.05)	0.463	285	1.02	(0.95-1.08)	0.659
Other work tasks	288	1.00	(0.98-1.03)	0.805	287	1.04	(1.01-1.07)	0.012

OR: Odds ratio; CI: confidence interval; Regression were adjusted for profession age and gender

^aNumbers may not reflect the total, due to participants dropping out

High score for perceived unreasonable work tasks was significantly positively associated with a self-reported high proportion of organisation-related administration and service work tasks (OR 1.05); i.e., higher frequencies of self-reported organisation-related administration and service work tasks corresponded to higher frequencies of unreasonable work tasks, Table 12.

Table 12. Associations between illegitimate work tasks above the cut-off value and administrative and service work tasks, n=290

Self-reported work tasks	Illegitimate work tasks (BITS)							
	Unnecessary work tasks above cut off value				Unreasonable work tasks above cut off value			
	n ^a	OR	(95 % CI)	p-value	n ^a	OR	(95 % CI)	p-value
Patient-related administration work tasks	283	1.02	(0.98-1.06)	0.335	282	0.98	(0.90-1.07)	0.695
Organisation-related administration and service work tasks	287	1.01	(0.98-1.04)	0.395	286	1.05	(1.01-1.08)	0.007
Total administration and service work tasks	282	1.04	(1.001-1.07)	0.046	281	1.04	(1.00-1.09)	0.082

OR: Odds ratio; CI: confidence interval; Regression were adjusted for profession age and gender

^aNumbers may not reflect the total, due to participants dropping out

DISCUSSION

The main findings showed that staff in Swedish primary care spend a limited proportion of their work time face-to-face with patients and that physicians perceived their psychosocial work environment in negative terms to a greater extent than all other staff members (paper I). Among the different profession categories, physicians were the ones that to the highest degree reported a perception of having to perform unnecessary work tasks compared to all other professions. Across all staff groups, the perception of having a negative psychosocial work environment was associated with high level of illegitimate work tasks, this concern for example role conflicts, quantitative demands and stress. Illegitimate work tasks were also associated with a high administrative workload (paper II).

The finding that staff in primary care reported spending a relatively limited proportion of their work day on direct patient work tasks is in line with results presented by The Swedish Agency for Health and Care Services Analysis [24]. The proportion of time for face-to-face contacts with patients among PCPs in Sweden and the Netherlands is low compared to several other countries in the Western world [24]. Like Sweden the Netherlands is influenced by NPM based on the ambition to increase efficiency, i.e. to perform more by using less resources [23]. During the last years the proportion of time allocated for direct patient work has decreased. The figure of 43% among RNs found in this thesis (paper I) was, however, somewhat lower than the 51%, among DNs, previously reported by Borelius in 2009 [19]. The development with NPM, aiming to make organisations more efficient [23] may have contributed to reprioritisations of work tasks, leading to RNs spending a proportionally larger amount of time on administration. Examples of such work tasks can be entering data into quality registers and registration of diagnoses into EHR. In the long run there may be the risk that the organisation in fact becomes less efficient, leading to less time for direct patient contact.

RNs spent a substantial amount of work time on telephone advice nursing. For the last few years, the routine with prioritised telephone contacts has been based on political decisions with a goal to reach a high level of accessibility to healthcare for citizens. If access via the telephone is good then it “all looks good” and this might be seen as giving the organisation a nice gloss (or facade) even if it does not necessarily make the organisation as a whole more efficient [21]. Good telephone accessibility might actually lead to a reduction of resources elsewhere, for example for direct face-to-face patient interaction. To what extent patient benefit would increase with more face-to-face time and less telephone interaction or vice-versa is difficult to determine. The degree of patient benefit and efficiency are difficult to measure. Primary care includes many work tasks and it has not been possible to find any recommendation of suitable proportions

of time for direct patient work tasks among health care professionals in the literature, which is also the conclusion of the official report from Swedish Government [7]. Although, the core activities in health care are patient consultations, medical and nursing assessments. It is important to meet individual needs in health problems, which is again also the conclusion of the official Swedish report [7].

A general development in primary care is that EHR has become an increasingly important tool among all professions. This is reflected by the fact that documentation in EHR was found to constitute the largest proportion of indirect patient work tasks. As expected, care administrators spent the largest proportion of time (45%) with indirect work tasks, compared to most medical professions, who spent about 30%. This finding was not surprising; the difference was rather expected to be even larger. In the present study PCPs spent nearly 30% of the total work time with EHR-related work tasks, including, for example, documentation, dictation and signing journal entries. On the other hand, in another study, by Arndt et al., they concluded that more than a half of work time among PCPs in primary care was spent interacting with EHR [80], obviously more than in the present study. Using EHR is an important part of the work among PCPs and is strongly integrated into the direct patient work, which could explain the EHR's relatively large proportion of work time. However, Howard et al. have stated that EHR in primary care resulted in improved working conditions among administrators, and in contrast, most physicians reported increased work burden, primarily for maintaining adequate documentation [81]. Since a rather large proportion of work time is spent on interacting with computer systems, a good functionality of these systems is required [81, 82]. Regarding the instrumental perspective of organisations, which is related to political governing and decisions [21], the introduction of EHR in health care can be considered to have made it possible to monitor defined medical goals. However, increased use of digital techniques is a general trend in society in general, both private and public, and primary care is a part of this development.

The results in the present study showed that staff spent about a third of work time with other work tasks. These are, for example, administrative work tasks and service-related work tasks and are not directly related to patients. As mentioned, the administrative work has been reported as a frustrating burden in primary care [7] and has thereto also been shown to be a potential hindrance to efficient patient care [83]. The introduction of some new work tasks and routines has certainly been initiated by politicians with good intentions. However, according to the conceptual perspective of "myths" in public organisations [21], it might be assumed that several of these work tasks have been introduced primarily to show legitimacy outside the organisation, implicating a normative adoption of new "recipes". In Sweden the public sector has been influenced by NPM with their reforms [23]. One example is Lean thinking. Lean has its origin from the industry sector, being evolved by Toyota and has been applied in health care. Lean focus-

es on just-in-time, efficiency and collaborating to systematically solve problems [84].

The PCC staff overestimated the proportion of work time that they spent on direct patient work tasks. Estimating time utilisation is difficult [41, 46] and in spite of the frustration among staff at increasing administration and the complex work situation, they still underestimate the proportion of other work tasks. Work tasks which are considered as important tend to be overestimated, which is previously described by Michelson [41]. The results in the current study are also in line with Bringsén et al. who reported nurses as perceiving work as more meaningful the nearer to patients the work task was performed [85] and Hertting et al. have stated that working with patients made work rewarding [59]. This might explain the overestimation of the proportion of direct patient work tasks and probably also illuminates the importance of being able to work with tasks in line with competence.

PCPs perceived the most unfavourable PWE. However, RNs, allied professionals and care administrators also reported high COPSOQ values for quantitative demands and stress. The result is not surprising with regard to the work situation in primary care which is often described as demanding, stressful and complex [58, 62]. The result in this study is also in congruence with previous research showing the problem in primary care with administrative burden and bureaucratic organisation to be associated with job dissatisfaction among PCPs [86] and it has been suggested that poor organisation climate can be associated with increased risk of absence due to illness [87]. A review article concluded in 2016 that research on the well-being of GPs is limited and emphasised the importance of interventions to improve psychological well-being among GPs [88]. Improved well-being among GPs can be achieved by, for example, compulsory coffee breaks, social support, making time for exercise and also increased administrative resources [89]. Social support from supervisors and well-balanced perception of effort and reward among nurses, auxiliary nurses and clerical staff can help to reduce absenteeism [90]. The problem with perceived unfavourable PWE can be an expression of the instrumental perspective due to the fact that allocation of resources (which of course are limited) is governed by political decisions. However, the problem with the shortage of primary care physicians and recruitment difficulties [7], is challenging to resolve. In Region Östergötland in Sweden the proportion of patients who get an appointment with a PCP within seven days, has decreased from 94% in 2014 to 88% in 2018 [91, 92], which can indicate decreasing availability. These results indicate important reasons to improve PCPs work situation, as well as other professions.

Allied professionals were shown to perceive more role conflicts if they had a larger proportion of administration and service work tasks. This might be a reflection of the fact that allied professions in Swedish primary care rarely have colleagues (or very few) with the same profession at PCCs, depending on the size of the PCC. Instead they often work alone and therefore lack an interactive

work environment. Working without peers might lead to isolation and it has been shown that face-to-face contact with colleagues has a positive impact on job satisfaction [93]. However, among physicians there were also associations between role conflicts and proportion of administration, but not as strong as among allied professionals. This might reflect a perception that some administrative work tasks are not included in PCP's professional role.

PCPs were the group that to the greatest extent perceived themselves as having illegitimate work tasks, more precisely through unnecessary work tasks. However, we have no information of what kind of work tasks the PCPs were referring to. One example of such a work task that has been described as problematic, and perhaps also illegitimate, is writing sick leave certifications [25]. This could be viewed as an expression of the instrumental perspective, due to political decisions associated with nationally stated healthcare goals (such as reducing sick leave numbers). In our material, there were associations between illegitimate work tasks and unfavourable PWE, which is in line with Semmer et al., who have stated that illegitimate work tasks can affect staff's professional identity negatively, can violate established norms for work tasks that can be expected from an employee [70]. Concordantly, preventing unnecessary work tasks is proven to benefit mental health [94]. Not being able to perform appropriate work tasks and give patients adequate care, due to for example lack of resources, can lead to a risk of the experience of stress of conscience [57]. Administrative work tasks, which staff are required to perform (and perhaps perceive as illegitimate), might lead to stress of conscience if they experience that the administration displaces other, direct patient work tasks (perceived as legitimate and more meaningful). Certain administrative work tasks, which are not believed to be of actual benefit for patients, may be perceived as illegitimate.

The results in this study also showed that if staff had a higher administrative work load they perceived to a greater extent having more unreasonable work tasks. All providers must be able to work in accordance with their competence [95]. Having a lot of administrative work tasks is not considered to be working at the level of one's education. The present study did not show any association between patient-related administrative work tasks and perceived illegitimate work tasks. However, this might be expected in view of the fact that patient-related administration work tasks have to be performed, by necessity, by medically educated staff and are therefore considered as legitimate. The commitment in public organisations includes administrative work tasks. This is unavoidable; administration has been and is incorporated in the health care sector and for good reasons. However, the amount of administration and the various types of administration can be discussed, and also who the most appropriate person or professions to perform them might be. Many changes, commitments and new routines (including administrative work tasks) have been introduced in public organisations due to political decisions. The politicians in general probably do have good intentions, but it can be assumed that they are rarely able to acquire sufficient knowledge of all information and details in such a complex organisation. Politi-

cal decisions are often of more general kind and it might be difficult to anticipate detailed consequences.

Using competence in line with professional competence might be obvious. One question is whether work tasks are in congruence with the staff's own expectations, considering which work tasks they should perform in their professional roles. Introduction of new routines and tasks into the organisation may be performed as a normative adoption of a new "myth" with the purpose of making legitimacy outwards and also with the aim of making the organisation more effective and rational [21]. If some work tasks are not in congruence with staff expectations, according to what kind of work tasks they should perform in their profession, the work tasks can be perceived as illegitimate.

Methodological discussion

This thesis reports on a comprehensive survey of time utilisation in Swedish primary care. The PCCs in the study are of different size and in geographical locations, which is a strength. The selection method based on purposive sampling [73] is considered to be a relevant method. The instruments used in the questionnaire, BITS [70, 74] and COPSOQ [52, 55] have both been validated and reliability tested with good results, which strengthens the credibility for the study. The cut-off values for the BITS facets have been used previously in Swedish settings, with satisfactory results [78]. The high response rate strengthens the credibility of the study. The managers at the PCCs were engaged in the study, which may have contributed to the high response rate.

Measuring time utilisation is challenging and can be performed through several methods, which also can be associated with different kind of measurement problems. However, the self-reporting, with a form/matrix method which was used in this survey, is probably a suitable way of getting as comprehensive recording as possible of time utilisation among primary care staff and minimises the risk of recall bias [41].

Time studies can also be performed by video recording [44], direct observation [43] or having a beeper emitting sound at random intervals [41]. However, these methods do not afford the opportunity to perform such a comprehensive time study as self-reported diaries/form/matrix. However, a validating comparison between beeper and diaries/form/matrix resulted in a correlation of 0.81 [41]. Video recording affords the opportunity of subsequent examination of the recording which can be advantageous. On the other hand, there may be issues with confidentiality in care situations. Self-reporting of time use does not require as many resources as, for example, observation methods and it would not have been possible to include as many participants with an observation method. However, there are also some weaknesses in self-reporting of time. There might very well have been some errors when filling in the time study forms as a result of stress, even though the participants intended to be accurate. Different participants might also

have viewed the same or very similar work tasks differently and recorded them as different work tasks. There is always a risk that participants distort or embellish or even lie about what they do [46].

It is also important to consider the value of self-reported time studies using diaries/form/matrix, considering that staff overestimated their proportions of direct patient work compared to the self-reported. In other words, it is not enough to ask staff to estimate work time. Counting amounts of time after the event is viewed as both difficult and unreliable. Estimates of time tend to give more inaccurate answers than self-reported time use [46] and furthermore, staff often overestimate the proportions of work tasks they consider as important [41].

Regarding comparisons with studies from other countries, where the concept "nurse" exists, these are probably in some cases staff who are not qualified RNs but are rather NAs or similar, but are still called "nurse". This may be seen as a weakness when comparisons are made with other countries. Some degree of uncertainty is likely to be present in some of the results, due to a limited number of participants. A possible limitation is the circumstance that writing sick leave certifications and other certificates was not specified as a separate work tasks in the time study. However, this might have been included in the work task *documentation* by the study participants. Furthermore, multitasking has not been investigated. Probably, it would have been more complicated and difficult for the participants also reporting when performing two or more work tasks at the same time. It would probably have negatively affected the reliability.

CONCLUSIONS

Staff in Swedish primary care spend a limited proportion of their work time directly face-to-face with patients. Physicians perceive the psychosocial work environment in negative terms to a greater extent than other professions and the physicians also report illegitimate work tasks to a higher degree compared with other professions. A large administrative work load affects psychosocial working conditions negatively. Allied professionals is the professional group with the strongest positive correlation between role conflicts and administrative work tasks, which means that the more administration they reported, the more role conflicts they perceived.

The perceptions of having to perform a large number of illegitimate work tasks affects the psychosocial work environment negatively, which might influence staff perception of their professional roles. The perception of unreasonable work tasks is more pronounced among staff with a high proportion of non-patient related administration.

IMPLICATIONS

The results illuminate the importance of appropriate use of profession related competence in order to attain efficient use of personnel resources and positive working conditions. The results should also be taken into account by operating managers and decision makers in primary care when organising primary care in considering the distribution and allocation of non-patient related work tasks among different health care professions. The study points towards the need for expanding the bulk of administrative staff within the core activities in primary care. Hopefully, the results of this study will contribute to further development of primary care so that medical competence will benefit patients as much as possible.

Further research, possibly with qualitative design, might shed light on what kind of work tasks are perceived as illegitimate among primary care staff.

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APPENDICES

Appendix 1. Questionnaire scales and answer options

BITS	
Unnecessary	Do you have work tasks to take care of, which keep you wondering if... ...they have to be done at all? ...they make sense at all? ...they would not exist (or could be done with less effort), if things were organized differently? ...they would not exist (or could be done with less effort), if some other people made less mistakes?
Unreasonable	Do you have work tasks to take care of, which you believe... ...should be done by someone else? ...are going too far, and should not be expected from you? ...put you into an awkward position? ...are unfair for you to have to deal with?
BITS Answer options:	Never, Rarely, Once in a while, Rather often, Frequently
COPSOQ	
Quantitative demands	Is your workload unevenly distributed so it piles up? How often do you not have time to complete all your work tasks? Do you get behind with your work? Do you have enough time for your work tasks?
Quality of work	Are you satisfied with the work done at your workplace? Is the quality of communication with patients good? Is the quality of the actual treatment of patients good?
Role conflicts	Do you do things at work, which are accepted by some people but not by others? Are contradictory demands placed on you at work? Do you sometimes have to do things, which ought to have been done in a different way? Do you sometimes have to do things, which seem to be unnecessary?
Conflicts between work and personal life	Do you often feel a conflict between your work and your private life, making you want to be in both places at the same time? Do you feel that your work drains so much of your <i>energy</i> that it has a negative effect on your private life? Do you feel that your work takes so much of your <i>time</i> that it has a negative effect on your private life? Do your friends or family tell you that you work too much?
Positive impact of work	Do you feel that your work gives you energy that has positive effect on personal life? Do you learn anything through your work that helps you to deal with personal and practical challenges in personal life?
Stress	How often have you had problems relaxing? How often have you been irritable? How often have you been tense? How often have you been stressed?

COPSOQ Answer options Quantitative demands: Always, Often, Sometimes, Seldom, Never/nearly never

Quality of work and Role conflicts: To a very high degree, To a high degree, Partially, To a low degree, To a very low degree

Conflicts between work and personal life and positive impact of work on personal life: Yes certainly, Yes Partially, Yes but only a little, No not at all.

Stress: All the time, Most of the time, Sometimes, Rarely, Not at all.

[illegible]

Appendix 3. Questionnaire, BTS and COPSOQ, mean results in all scales

Professions	Illegitimate (BIRS)				PWE ³ (COPSOQ)						
	n	Unnecessary work tasks	n	Unreasonable work tasks	n	Quantitative demands	Stress	Role conflicts	Quality in work	Conflicts between work and personal life	Positive impact of work on personal life
Registered nurse	127	2.7	127	2.5	127	48.2	31.9 ^b	25.1 ^b	77.0	28.4	57.8 ^b
Primary care physician	63	3.1	63	2.8	63	61.1	41.2	37.2	78.2	49.2	59.0
Care administrator	65	2.4	65	2.0	65	44.2	32.2 ^c	24.8 ^c	78.6 ^c	18.1	51.6 ^c
Nurse assistant	35	2.4	35	2.1	35	34.8	27.3	22.5	80.0	14.8	56.7
Allied professionals	40	2.4	39	2.2	39	51.3	32.9	24.7	78.4	30.6	62.8
Overall	330	2.7	329	2.4	329	48.8	33.4	27.0	78.0	29.2	57.3

BTS: Bern Illegitimate Tasks Scale

COPSOQ: Copenhagen Psychosocial Questionnaire

^aPsychosocial Work Environment

^bn=126 due to internal drop-outs

^cn=63 due to internal drop-outs

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