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Everyday occupational problems perceived by participants in a pain rehabilitation programme.

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Background: The knowledge of the diversity of occupational problems perceived by people with chronic pain is insufficient.

Aims: To describe everyday occupational problems among patients with musculoskeletal pain enrolled in a pain rehabilitation program, and to compare subgroups based on participant characteristics.

Methods: The sample consisted of 152 men and women. Occupational performance was assessed with the Canadian Occupational Performance Measure (COPM). Other data were obtained from forms including socio-demographic variables and pain diagnoses.

Major findings: The participants reported 706 prioritized everyday occupational problems categorised as self-care (37%), productivity (32%), and leisure (31%). Household management was the largest sub-category. Working, sitting and cleaning the house were the specific occupational problems reported most frequently. Women reported significantly more occupations related to productivity and men reported more self-care occupations.

Principal conclusion: Patients with pain have a wide range of occupational problems that need to be addressed, along with gender specific needs.

Key words

Pain measurement, activities of daily living, chronic pain, occupational therapy, COPM

Introduction

Persistent pain has negative effects on participation in self-care, physical, and social/recreational activities and in family life and work (1,2). Pain rehabilitation programmes are aimed at reducing pain related consequences and increasing the patients' activity and participation in society (2).

Assessments and outcomes after pain rehabilitation usually focus on variables such as psychological functioning, workability, physical functioning and pain (3). Further research addressing the patients' self-defined goals, occupational problems and activity limitations has been called for (1,4).

The International Classification of Functioning, Disability and Health (ICF) provide an interactive view of health (5). Ability (capacity) and its opposite disability (incapacity) are essential ingredients in the implicit philosophy of health in the ICF. Activity is, in the ICF, defined as the execution of a task or action by an individual and participation is seen as involvement in a life situation (5). In order to provide relevant treatments and outcomes, it is necessary to explore how patients with persistent pain experience and prioritize activities and participation. For such purposes, based on opinions by patients with low-back pain, Hush et al. (6) recommended measurements that capture the breadth and depth of domains that are meaningful to the patients. The Canadian Occupational Performance Measure (COPM) (7) was developed with that in mind. This semi-structured interview-based measure focuses on meaningful and important occupations as chosen by patients. The COPM was developed for use by occupational therapists, but has also been adopted as a general outcome measure for team-based pain rehabilitation (8-12). Occupations are in this context used to denote all kinds of everyday chores, including self-care, paid/unpaid work, household management, and leisure (13). The theoretical framework for the COPM is the Canadian Model of Occupational Performance (CMOP) and a more recent, revised version where the term Engagement was added

(CMOP-E) (13,14). Occupations are conceptualized as all kinds of meaningful and age appropriate human doings pertaining to looking after oneself, enjoying life, and contributing to the social and economic fabric of a community (13,14). The term *occupational performance problems* refers to both activity limitations and persons' individual and subjective experience of participation and is thus seen as a supplementary concept in relation to the ICF model (14). In the present study activity limitations and occupational performance problems are described as everyday occupational problems. The COPM provides a broader spectrum of information about the patient's purposeful occupations, changing focus from body function to activity and participation (11).

Samuelsson et al. (10) found working to be the most frequently prioritized everyday occupational problem (69% of participants) in a population of patients with musculoskeletal pain, whereas Walsh et al. (9) reported walking (56% of participants) to be the most frequently prioritized problem among patients with chronic low-back pain. These diverging findings indicate a need to further assess which types of occupational problems are most relevant among patients with pain entering pain rehabilitation programmes. This was the first incitement for this study.

Socio-demographic factors tend to play a crucial role for health (15). Increased knowledge of whether different subgroups of pain patients, based on e.g. gender, ethnicity and age, need specifically tailored treatments (2,16) or are at increased risk of disability (17) has been requested. Such information may improve the ability for pain rehabilitation to meet patients' most important needs. Recently socio-demographic factors were found to be associated with pain-related consequences among patients referred to a pain rehabilitation programme. Belongings to different pain diagnostic subgroups were also found to be differently associated with activity limitations and physical disability (18). One study suggested that pain management

strategies that target functional disability may be particularly important in the treatment of women (19). Another study showed that women expected to have fewer problems with household activities after pain rehabilitation and men expected a better ability to cope with being a spouse (20). To our knowledge, no research has revealed whether subgroups of pain patients differ regarding which categories of everyday occupations they find difficult. This was a second incitement for this study.

The aims of the present study were thus to describe the most important everyday occupational problems, with respect to frequency and diversity, among patients with musculoskeletal pain enrolled in a pain rehabilitation programme, and to compare subgroups based on socio-demographic factors, pain duration and pain diagnoses. The socio-demographic factors included age, gender, ethnicity, educational level, marital status and vocational status.

Material and methods

This is a combined qualitative and quantitative descriptive study. Socio-demographic and clinical data (pain duration and pain diagnoses) were gathered by questionnaires prior to the first visit to the clinic and by the attending physician at admission. All data were entered in a clinical database and were later retrieved for analysis.

Setting

Patients referred to a musculoskeletal interdisciplinary pain rehabilitation programme, offered at a specialized tertiary pain rehabilitation clinic in a Swedish university hospital, were the study participants. The five-week pain programme was delivered by teams of physicians, occupational therapists, physiotherapists, psychologists and social workers. The occupational therapists used the COPM to identify everyday occupational problems before interventions. During the first week, a rehabilitation plan was written for each participant after individual assessments by the

teams. The programme covered several areas aiming at increasing the participants' strategies for pain management and enhancing their activity level and participation in society. The interventions consisted of lectures, group discussions, home-exercises and practical training, and the problems identified by the COPM were directly focused in the occupational therapy sessions.

The principles of the Declaration of Helsinki were followed and the study was approved by the Regional Ethical Review Board (No H4 269/2006).

Participants

Patients referred to the pain rehabilitation programme from 2003 to 2008 were included in the present study. Inclusion criteria for the rehabilitation programme were: completed screening by a pain rehabilitation team, chronic pain with significant impact on everyday life, age of 18 to 65 years, and being able to participate in group activities. Exclusion criteria were: on-going substance abuse, not fluent in Swedish and acute psychiatric disorder. A total of 813 individuals met these criteria. Seven hundred and fifty-nine patients had completed the COPM interviews and approved that their data received by forms were included in the database. Drop-out analyses revealed no significant difference on socio-demographic variables, pain duration or pain diagnoses, between those who did not fulfill the COPM ($n = 54$) and those who did ($p > 0.05$). For the present study, a subgroup of 20% ($n=152$) was randomly generated by the SPSS statistic program (version 18.0) to obtain a representative sample of the 759 individuals. The sample differed from the total group with regard to age ($p = 0.001$), being on average two years older (42 years). No other significant differences were found regarding socio-demographic and clinical variables. The sample was thus considered to represent the total study population.

The characteristics of the 152 participants are presented in Table I. Most were women (79%) and Nordic born (85%). Fifty-seven per cent had an educational level of upper

secondary school and 62% were on full time sick leave prior to admission. The pain diagnoses were clustered in: i) pain related to the spine (51%), ii) wide-spread pain (a diagnosis of fibromyalgia, 25%) or iii) having a less frequently occurring diagnosis, here referred to as “other” (24%). The participants within the “other” group had diagnoses related to headache, pain at specific locations (other than the spine), or myalgia.

Table I about here

Measures and data collection

The COPM (7) is administered in a stepwise procedure, starting with an interview identifying the participant’s problems with everyday occupations, followed by ratings of the importance of being able to perform each occupation on a scale from 1 (= not important at all) to 10 (= extremely important). The participant first identifies the most important problem, then the second most important problem and so on up to a maximum of five problems that are focused on during rehabilitation. Then, each of these occupations is rated on a *performance scale* (1 = not able to perform, 10 = able to perform extremely well) and a *satisfaction with performance scale* (1 = not satisfied at all, 10 = extremely satisfied). The COPM has been found to be reliable (21) and valid, when tested for concurrent criterion and construct validity (22,23), suitable for improving the process of goal-setting and to be a responsive outcome measure for occupational therapy in general (11) and for pain and team-based treatment programmes specifically (10,24,25). The Swedish version (26), also shown to be responsive to change over time (11), was used in the present study. When denoting everyday occupations the therapists used words close to the participants’ denominations and understandable in the sense of providing meaning and value for both the participants and the therapists. The actually reported single everyday occupations were grouped into similar everyday occupations. For example “cleaning”, “vacuuming and cleaning the floor” and “cleaning the floor” were all grouped into a single

everyday occupation named “cleaning the house”. The reported everyday occupational problems ranged from unspecific activities or everyday occupations, such as “being able to work”, “managing my household” and “planning my time to get good routines”, to more detailed everyday occupational problems as “writing on the computer at work” and “to grasping or holding household tools” and problems close to activities or physical functions, such as “sitting”, “lying down” or “standing”.

Forms including socio-demographic factors (gender, age, ethnicity, marital status, educational level and vocational situation) and the clinical factor of pain duration were administrated by mail prior to admission and filled in by the participants. At admission the attending physicians identified relevant pain diagnoses according to the ICD-10 recommendations. Data from the mailed forms and pain diagnoses were registered by medical secretaries in the database at the clinic, also used for national pain registry comparisons (27). The occupational therapists registered the participants’ everyday occupational problems, as identified by the COPM, in the medical records and in the COPM manual and the performance and satisfaction scores were à posteriori entered in the clinical database.

Data analyses

The first author categorized the reported problems into main categories and sub-categories (see Table II) in accordance with the COPM manual (26) and the theoretical framework of the COPM (13, 14). The first category is self-care, with the sub-categories personal care, functional mobility and community management. Apart from occupations directly related to personal care, this sub-category also includes everyday occupational problems related to organization of personal space and time. This categorization is emphasized in the CMOP although not clearly described in the COPM manual. The second category concerns productivity and includes occupations that make a

social or economic contribution or provide economic sustenance. The sub-categories are paid/unpaid work, household management and play/school. The third category is leisure and includes occupations for enjoyment and recreation. The targeted sub-categories are quiet recreation, active recreation and socialization.

Author ME independently categorized 20% ($n = 164$) of the occupations according to the same procedure and thereafter both categorizations were compared. Inter-rater reliability was calculated as: $\alpha = 1 - (\text{observed disagreement} / \text{expected disagreement})$. This procedure corrects for chance agreement and was proposed by Krippendorff (28) as suitable for content analysis. Observed disagreement corresponds to the number of everyday occupations where the raters arrived at different categories. Expected disagreement is the number of disagreements that would emerge by chance. In the present study, 164 occupations were categorized into nine sub-categories. In this example, the expected disagreement was $164 \times 8/9$. By this procedure, an alpha coefficient of 0.91 was achieved. This was considered satisfying and the activities or occupations differently categorised ($n = 13$) were discussed until consensus was reached. The alpha value was 0.91 for agreement on the three main categories ($164 \times 2/3$).

Descriptive statistics were used to present the characteristics of the participants and their everyday occupational problems. The Chi-square test of independence was used for drop-out analyses and to analyse differences between subgroups (based on gender, age, ethnicity, vocational status, educational level, marital status, pain duration and diagnosis) regarding number of problems in the three main categories of the COPM. Some of the sub-groups were small (fewest $n = 32$) and this may have relevance for the results. P-values from continuity correction and Pearson's Chi square were retrieved. The present study was performed in a naturalistic context and no *a priori* power calculation was made. The SPSS for Windows version

18.0 was used for all statistical analyses. P-values smaller than 0.05 were considered statistically significant.

Results

Categories and sub-categories of everyday occupational problems

In total 706 everyday occupational problems were deemed as important by the 152 participants (mean 4.6 occupations per participant).

The number of problems was 260 (37%) in the self-care category, 229 (32%) in the productivity category and 217 (31%) in the leisure category. In the nine sub-categories, problems related to household management (n = 151; 21% of all occupations), functional mobility (n = 118; 17% of all occupations) and personal care (n = 105; 15% of all occupation) were most common (Table II).

Table II also describes the percentage of participants reporting problem in each main category and sub-category. One hundred and seventeen of the participants reported problems with self-care, 129 with productivity and 118 with leisure. One hundred and four of the participants reported problems with household management, 74 with personal care and 74 with functional mobility. Fifty-eight of the participants reported work as problematic.

Table II in here

Specific everyday occupational problems

A large majority, 654 (93%), of the 706 identified everyday occupational problems were reported five or more times (Figure 1). The rest (n = 52) of the identified everyday problems occurring less than five times were categorised as self-care (n = 12), productivity (n = 5) and leisure (n = 35) and are not shown in the figure. The most frequent specific everyday problems in

the self-care category were: “sitting”, “sleeping” and “taking a break during activities”. In the productivity category “cleaning the house”, “cooking” and “working”, and in the leisure category “associating with friends”, “exercising”, and “reading a book” were the most frequent occupations.

The most frequent specific everyday occupational problems, all categories concerned, were: “working” (n = 43, 6% of all reported occupations), “sitting” (n = 41, 6%), “cleaning the house” (n = 39, 6%), “cooking” (n = 38, 5%), and “sleeping” (n = 31, 4%).

Figure 1 about here

The first prioritized everyday occupational problems

The everyday occupational problems prioritized as number one are further described by category below and the percentage in each main and sub-category shown in Table II; if occurring five time or more then the number of each specific first prioritized problem are presented in brackets after the bars in Figure 1.

Self-care A majority of the first prioritized everyday occupational problems (n = 152) were categorised as belonging to the self-care category (n = 80). Out of these 152 problems the main part belonged to the sub-category of personal care (n = 48) and to the functional mobility sub-category (n = 22). The most frequently reported specific problem was “sleeping” (n = 27), which was also was the most common first prioritized single problem in all categories.

Productivity Fifty-one of the first prioritized everyday occupational problems were characterized as belonging to the productivity category and most of these belonged to the sub-categories of work (n = 30) and household management (n = 16). The most frequently reported single problem was “working”.

Leisure Twenty-one of the first prioritized everyday occupational problems were categorised as leisure. Eleven problems were reported in the sub-category of quiet recreation and many were not described in Figure 1, as they occurred less than five times each. Examples of these problems were: “painting”, “ceramics”, “handicraft”, “watching TV” and “photographing”. The most frequently first prioritized single problem in this category was “associating with family”.

Influences of socio-demographic and diagnostic groups

Analyses of differences between subgroups (based on socio-demographic variables, pain duration and diagnostic groups) and the three main categories of the COPM, showed statistically significant differences only for gender ($p < 0.001$). All other subgroup analyses revealed a p-value above 0.05. Women reported a total of 563 (79%) everyday occupational problems, and men reported 143 problems. The distribution in each category for the women/men was: self-care 33%/53%, productivity 36%/17% and leisure 31%/29%. At the sub-category level, women’s most frequently reported problems concerned house-hold management (24%), functional mobility (14%) and personal care (13%) and men’s most frequently reported problems pertained to functional mobility (27%), personal care (21%) and quiet recreation and socialization, both representing 11%. The most frequently reported specific problems among women were: “cleaning the house” ($n = 38$), “cooking” ($n = 32$) and “sitting” ($n = 27$) “. Among men, “sitting” ($n = 14$), “sleeping” ($n = 12$) and “having a break during activities” ($n = 8$) were the most frequently reported problems.

Discussion

The aims of the present study were to describe the most important everyday occupational problems among patients with musculoskeletal pain enrolled in a pain rehabilitation programme,

and to compare subgroups based on socio-demographic factors, pain duration and pain diagnoses. There was fairly even distribution of everyday occupational problems between the main COPM categories of self-care (37%), productivity (32%) and leisure (31%). Most participants (85%) identified problems categorized as productivity and many also had problems categorized as self-care (77%) and leisure (78%). Household management was the most frequent sub-category. Working, sitting and cleaning the house were the specific occupational problems reported most frequently. Analyses of distributions of the COPM categories in different socio-demographical and diagnostic sub-groups of participants showed significant differences for gender only, with women having significantly more problems related to productivity and men to self-care.

Several studies reporting frequencies of occupational problems using the COPM have been published (10,29-30). One of these (10) was similar to the present study with regard to type of participants (mixed pain diagnoses and mostly women) and rehabilitation setting (specialized pain rehabilitation at university hospital). Almost the same percentage of problems in the leisure category (32% as compared to 31% in the present study) was reported in that study (10). These authors, however, observed a higher frequency of problems in productivity (40% as compared to 32%) and a somewhat lower frequency in self-care (28% as compared to 37%). Further comparisons with studies using the COPM in pain populations were not feasible, as descriptions of the COPM categories were not included (8,12,31).

Based on the assumption that the participants' first prioritized problem indicates the most important problem, we investigated the distribution of these in the main COPM categories. A majority of the first prioritized problems belonged to the self-care category. There was a tendency for the importance of problems in the categories to decrease in the order of: self-care > productivity > leisure (Table II). The identification of self-care as the category including

most occupational problems has also been described in several other studies based on the COPM, as reported in a review of research using the COPM (32). That limitations in self-care were particularly prevalent was also shown in a study using focus group interviews with participants with persistent pain (1). In contrast, one other study using COPM on participants with pain and one study including pain patients but also participants with other diagnoses have shown occupational problems to be more frequent in the productivity category (10,29).

Working, sitting and cleaning the house were the three specific everyday occupational problems that were most frequently reported (Figure 1). However, among the first prioritized occupational problems (shown in brackets after the bars in Figure 1) sleeping was most frequent (n = 27) followed by working (n = 21). In addition to all everyday occupational problems deemed as important, descriptions of the first prioritized ones may generate a greater understanding of occupational consequences for persons with persistent pain and their preferences regarding problems.

Gender differences were found in the present study; women reported significantly more problems related to productivity while men reported more self-care problems. Such gender differences in pain patients' reports on the COPM have to our knowledge not been described previously. Stubbs et al. (19) highlighted that pain management strategies may be particularly important in the treatment of women with pain as women have been reported to have greater pain-related disability than men. More research is needed to identify how and why the consequences manifested in everyday occupations are perceived differently by men and women, and if gender specific needs have to be considered during pain rehabilitation.

Some of the reported problems were not evidently occupational, as for example "sitting", "grasping/holding" and "lying down". Such problems are sometimes not categorised in COPM studies but are regarded as functional impairments (33); in the ICF (5) they are classified

as activities. The term activity denotes a less complex level than the term occupation as conceptualized within the CMOP model (13,14), which also considers meaningfulness and personal relevance and the context in which the activity occurs.

Tentative ICF core sets for musculoskeletal and pain conditions have been presented to identify relevant categories in common ICF core set for chronic musculoskeletal conditions. Environmental factors were then seen to be more important for patients with wide-spread pain than for patients with low-back pain. The ICF components of activities and participation were found to be the most relevant categories for the population including low-back pain. However, the profile of functioning for chronic wide-spread pain differed and was recommended not to be further considered for a common ICF core set (34). This indicates that occupational problems are important to focus during pain rehabilitation at least for low-back pain diagnoses. As environmental factors are related to problems with occupational performance (14), and seen to be of more relevance for wide-spread pain, including fibromyalgia, (34) these relations needs to be further addressed in their associations with everyday occupational problems.

Sleeping was the most frequent first prioritized problem, reported as being difficult for 20% of participants. Other investigations have confirmed that sleeping problems are common among patients with persistent pain (2,3,35). The sleep function has also been shown important in the research on ICF core sets (34). In most definitions of the concept of occupation it is generally equated with action (14,35). Good-enough sleep is seen as a prerequisite for the ability to engage in occupations. Rehabilitation can indirectly affect sleep and sleep advice is often offered during pain rehabilitation. Aspects of daily occupations and total time devoted to activities have been found to influence sleep (36). It is reasonable to anticipate that meaningful occupational patterns during daytime result in better sleep at night. Furthermore, pain patients

often report problems with time adjustment and with temporal imbalance (37). Strategies that provide structure and routine in everyday occupations are found to be helpful (38) and engagement in occupations has been shown to have a therapeutic potential, in terms of organizing time and bringing structure and meaning to life (4,14). Based on existing research, a temporal balance as a whole should thus be put in focus when patients have problems with sleeping.

The present study presents some implications for conducting occupational therapy in interdisciplinary pain management programmes. However, to enable comparisons between studies using the COPM in pain populations, knowledge of theoretical frameworks, in particular the Canadian Model of Occupational Performance and Engagement (CMOP-E) (14), as well as knowledge of pain management skills, is warranted. Furthermore, in order to properly address occupational problems, observations and analyses of the occupation at hand are required to include appropriate methods of treatment to help participants reach their everyday occupational goals. The outcome measures should fit the intervention as well as the goals for the pain rehabilitation programme. The COPM is a well-designed outcome measure, suitable in programmes intended to reduce occupational problems and activity limitations (24).

Limitations and clinical implications

In the present study, with its qualitative nature, it was not possible to include all participants registered in the database and therefore a random sample was used. The small age difference (2 years) found between the participants and the non-participants was judged not to have any bearing on the results. Neither was the uneven distribution of women (79%) versus men (21%) considered problematic, since a gender distribution with more women is common in pain rehabilitation populations (10,27). As no substantial differences from the larger population of

756 individuals were found in this randomized sample it should be possible to generalize the findings to similar pain patient populations.

The specific everyday occupational problems were in the present study categorised by two of the authors and the inter-rater reliability test gave satisfying results. Although this categorization must be seen as a strength of the study, it would have been preferable to also present the categorizing as performed in the context of the interviews.

Conclusion

Patients with persistent pain have occupational problems that need to be addressed in rehabilitation programmes. Work and household related occupations, as well as sleep and sitting seem important. Gender specific needs should also be addressed. In order to capture each patient's needs during a pain rehabilitation programme the measures used should assess each individual's most important occupational problems.

Key messages

- By addressing the participants' most important occupational problems the therapists can assist each participant to improve performance in relevant domains during intervention.
- Focusing only on the most prevalent problems might obscure the severity revealed in the prioritizing of problems.
- As occupational problems may differ between gender pain management strategies may need to be optimized by different clinical routes for men and women.

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Table 1. Socio-demographic and clinical data for the 152 participants.

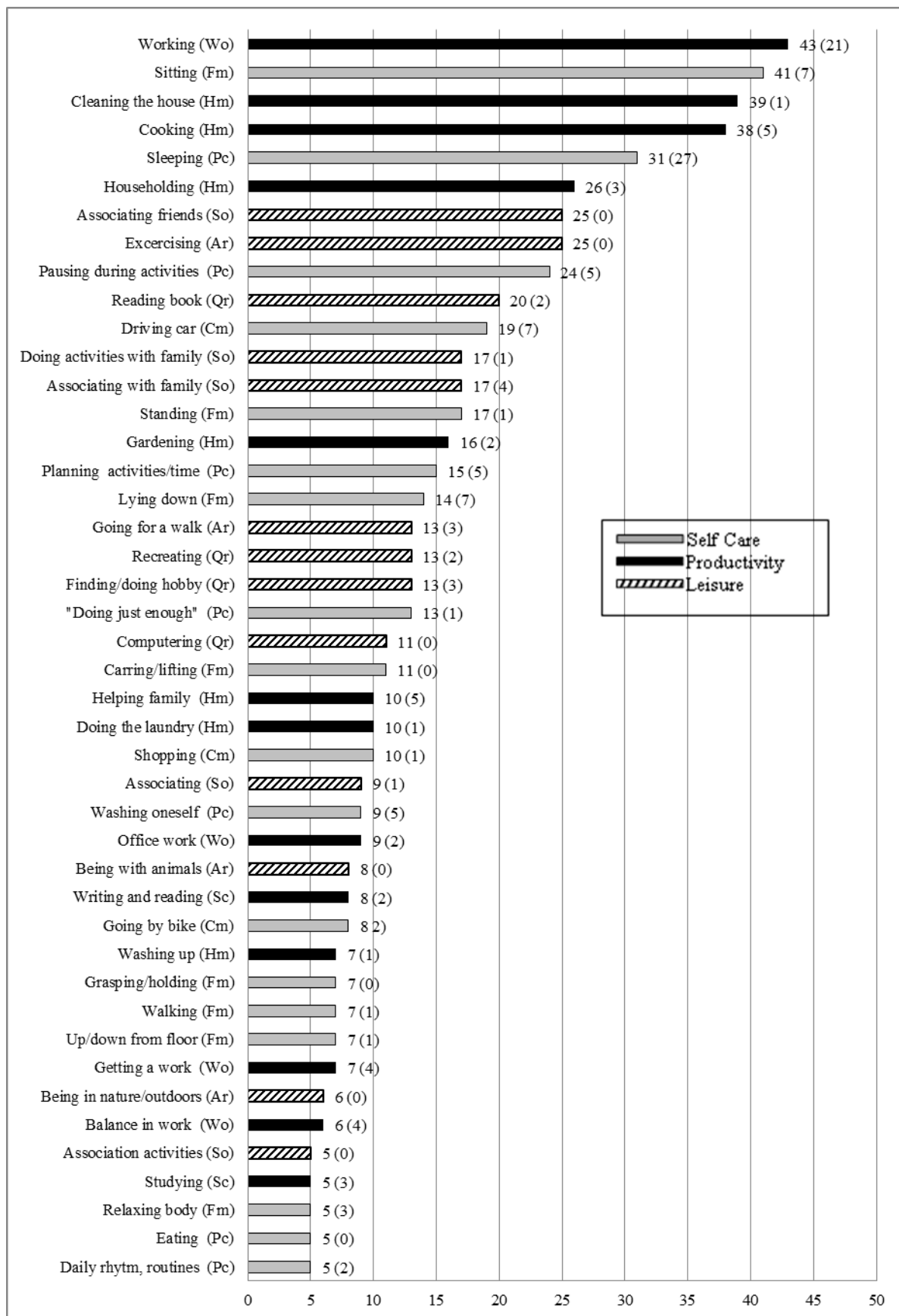
Socio-demographic and clinical groups	n (%)
Gender	
Female	120 (79%)
Age (mean SD)	42 (8,6)
(min – max)	(21-61 year)
Diagnostic groups	
Fibromyalgia	38 (25%)
Spine Diagnoses*	78 (51%)
Other**	36 (24%)
Pain duration (days) Median	2463
(IQR)	(918-3203)
Ethnicity	
Nordic born	129 (85%)
Vocational situation	
Working $\geq$ 25%	57 (38%)
Education	
Secondary school	33 (22%)
Upper secondary school	87 (57%)
University	32 (21%)
Marital status	
Married/cohabiting	120 (79%)

*. includes neck-disorders (n = 45, 30%) and low back pain (n = 33, 22%), ** includes myalgia (n = 16, 11%) and other less frequent single diagnoses (n = 20, 13%).

Table 2. Everyday occupational problems (n = 706), first prioritized occupational problems (n = 152) and participants (n = 152) with occupational problems in main categories and sub-categories of the COPM.

COPM	Occupations	First	Participants with
main categories and sub-categories	in main categories and sub-categories	prioritized occupations in main categories and sub-categories	problems in main and sub-categories
	(n = 706)	(n = 152)	(n = 152)
	%		
Self-care	37	53	77
Personal care	15	32	49
Functional mobility	17	14	40
Community management	5	7	22
Productivity	32	34	85
Work	9	20	38
Household management	21	11	68
Play/school	<1	3	7
Leisure	31	14	78
Quiet recreation	11	7	46

Active recreation	8	2	36
Social recreation	11	5	39



LEGEND

Figure 1. The specific everyday occupational problems occurring five times or more are presented. The abbreviation for each sub-category is given in brackets; Pc = Personal care, Fm = Functional mobility, Cm = Community management, Wo = working, Hm = household management, Sc = studying, Qr = quiet recreation, Ar = active recreation and So = socialization. The figures in brackets represent the total number of times that the specific occupation was first prioritized.