

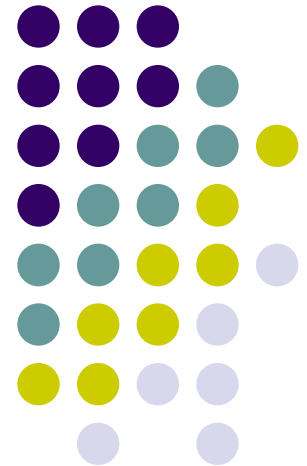
# Job specific factors and prevalence of multisite and disabling musculoskeletal pain among office workers, nurses and caregivers

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# Introduction

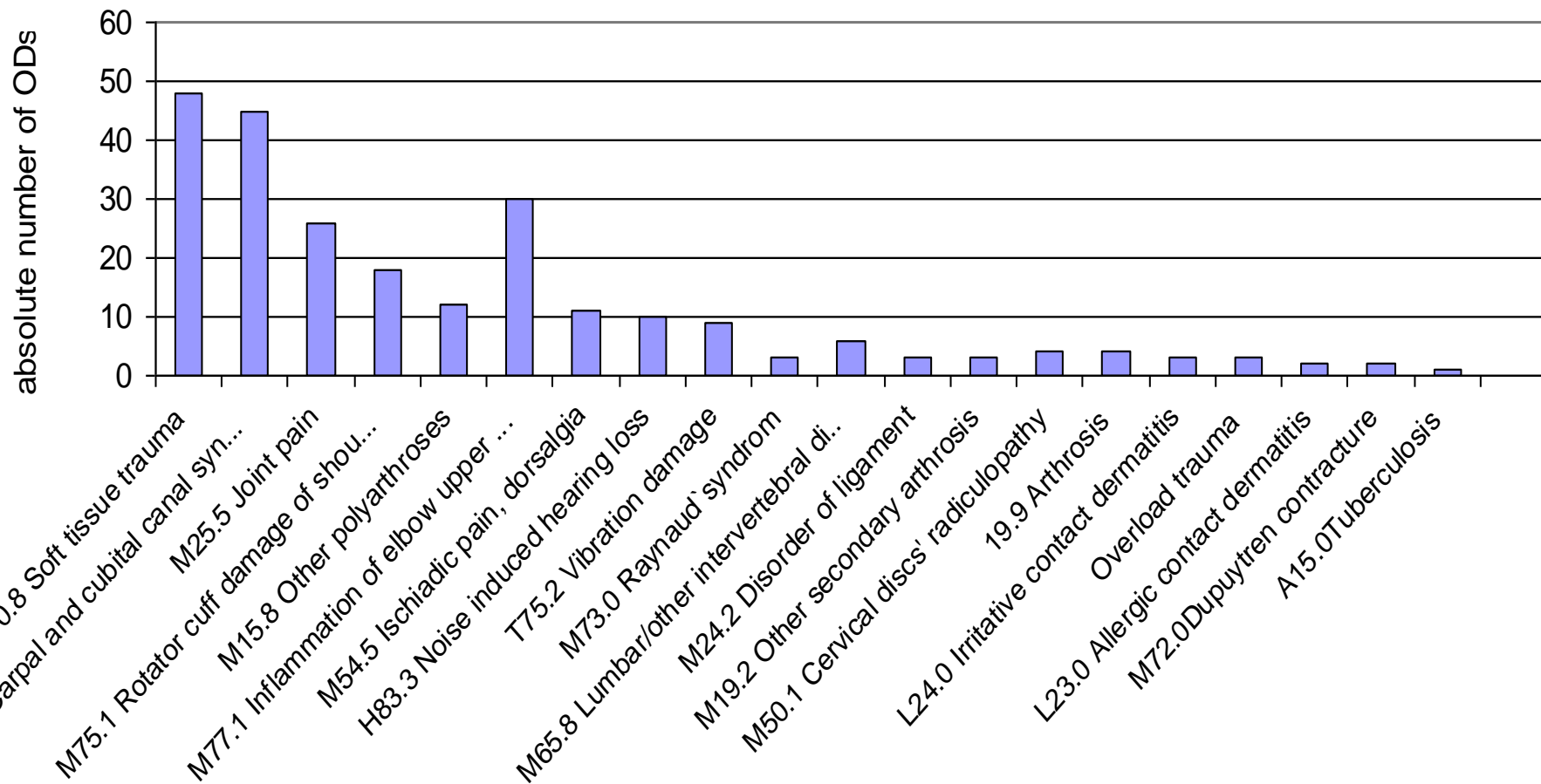
- Musculoskeletal Disorders (MSD) are increasing health problem of work related diseases (WRD) in Europe
- In EU-27 countries ~50-60 milj workers report MSD
  - Low back pain (LBP) F 25% M 32%
  - Neck-, shoulder- and hand pain F 22% M 16%
  - Hip- and leg pain F 12% M 13% (EU-OSHA, 2009)
- The study of work force in UK has demonstrated, that 2 milj people reported WRD, where 50% MSD-s
  - Low back, neck and upper extremities' pain are on the first place among registered MSDs (HSE, 2007).



# Background

- In the Estonian Psychiatry Departments ~ 1/3 of nurses reported work-related LBP and MSD (Saar, 2000)
- In the Estonian Pathology Departments the laboratory technicians reported
  - 41% LBP, 18% hand pain, 16% feet pain
  - the years in practice increased prevalence of LBP
  - >10 a OR ↑ 8x      >25 a. OR ↑ 14x
  - With increasing of age >50 years OR for prevalence of LBP was 16x higher (Haava, 2007)

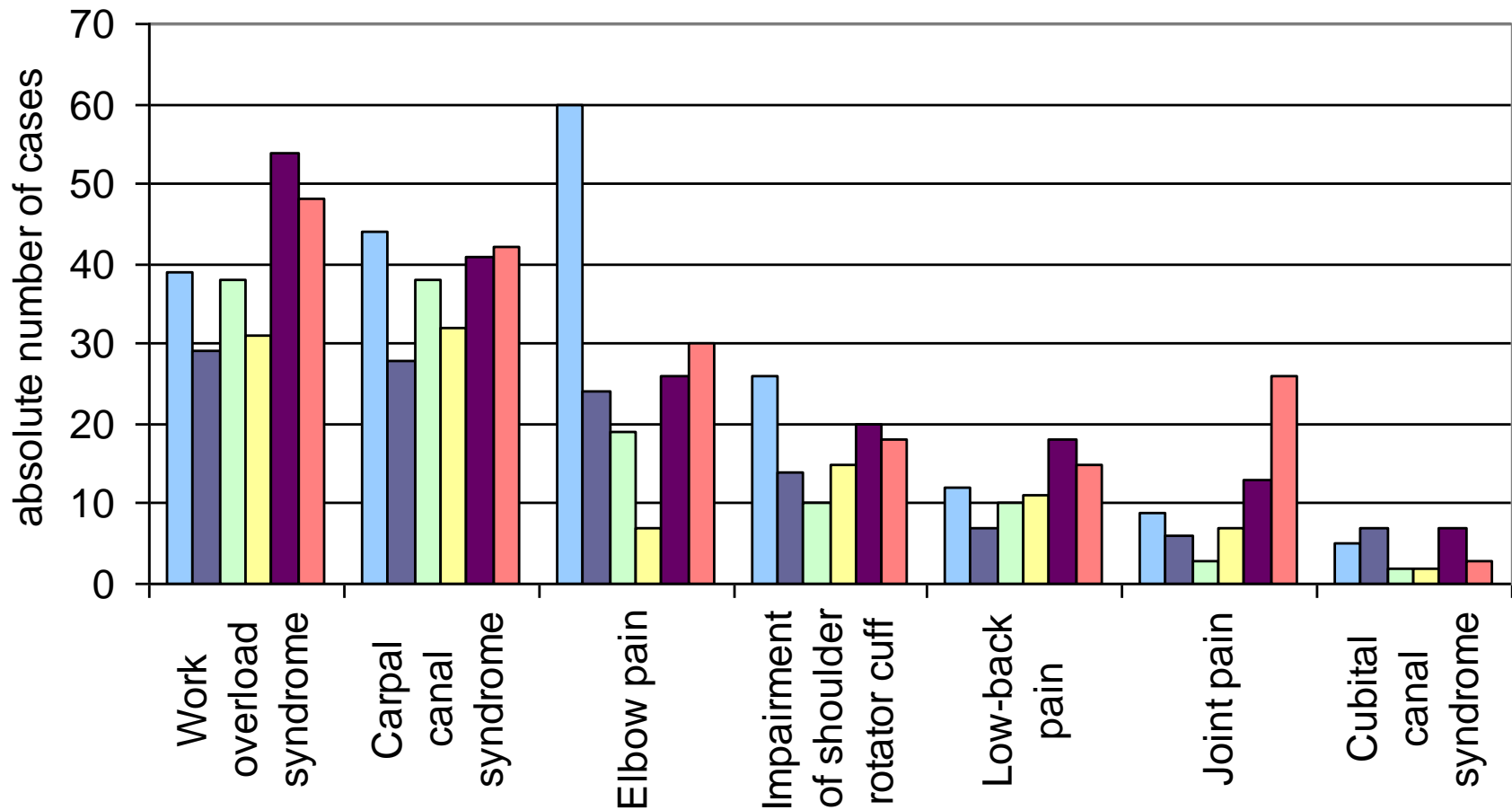
# Occupational diseases in Estonia 2011



# MSD as OD diagnostics in Estonia 2006-2011



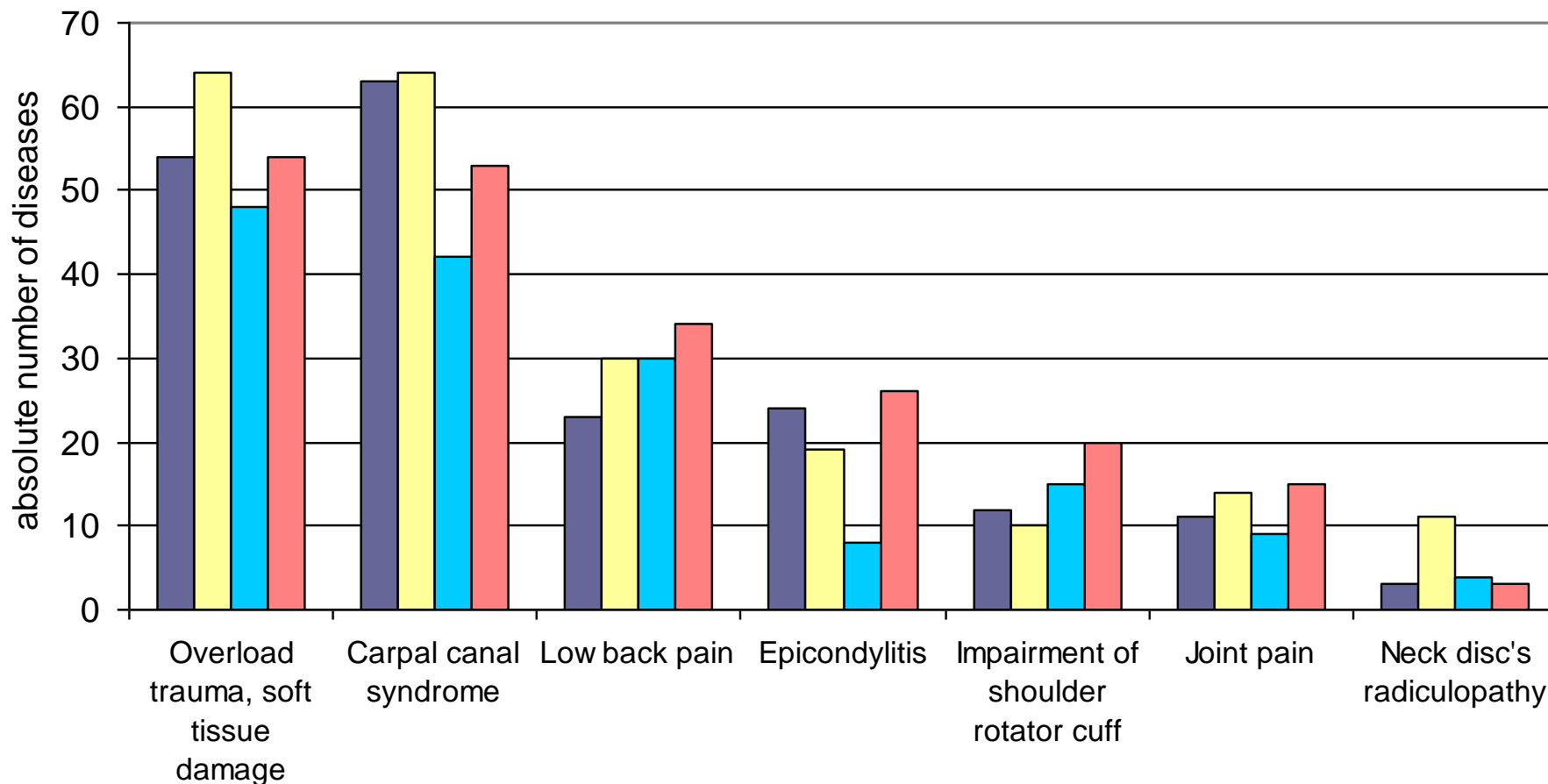
2006 2007 2008 2009 2010 2011

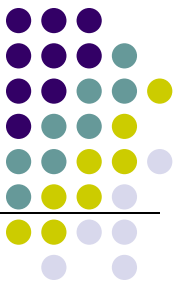


# MSD as WRD diagnostics in Estonia 2007-2010



■ 2007 ■ 2008 ■ 2009 ■ 2010





# Prevalence of MSD-12 among office workers

Country	MSD-12	Researchers, study year
<b>Thai</b> (n=1185)	63%	Janwantanakul et al., 2008
<b>Japan</b> (n=2327)	26%	Ye et al., 2007
<b>UK</b> (n=175)	86%	Woods et al., 2005
<b>Denmark</b> (n=3361)	75%	Juul-Kristensen et al., 2005
<b>Sweden</b> (n=1283)	87% F, 76% M	Hagberg et al., 2002
<b>Netherland</b> (n=264)	54%	Ariens et al., 2001

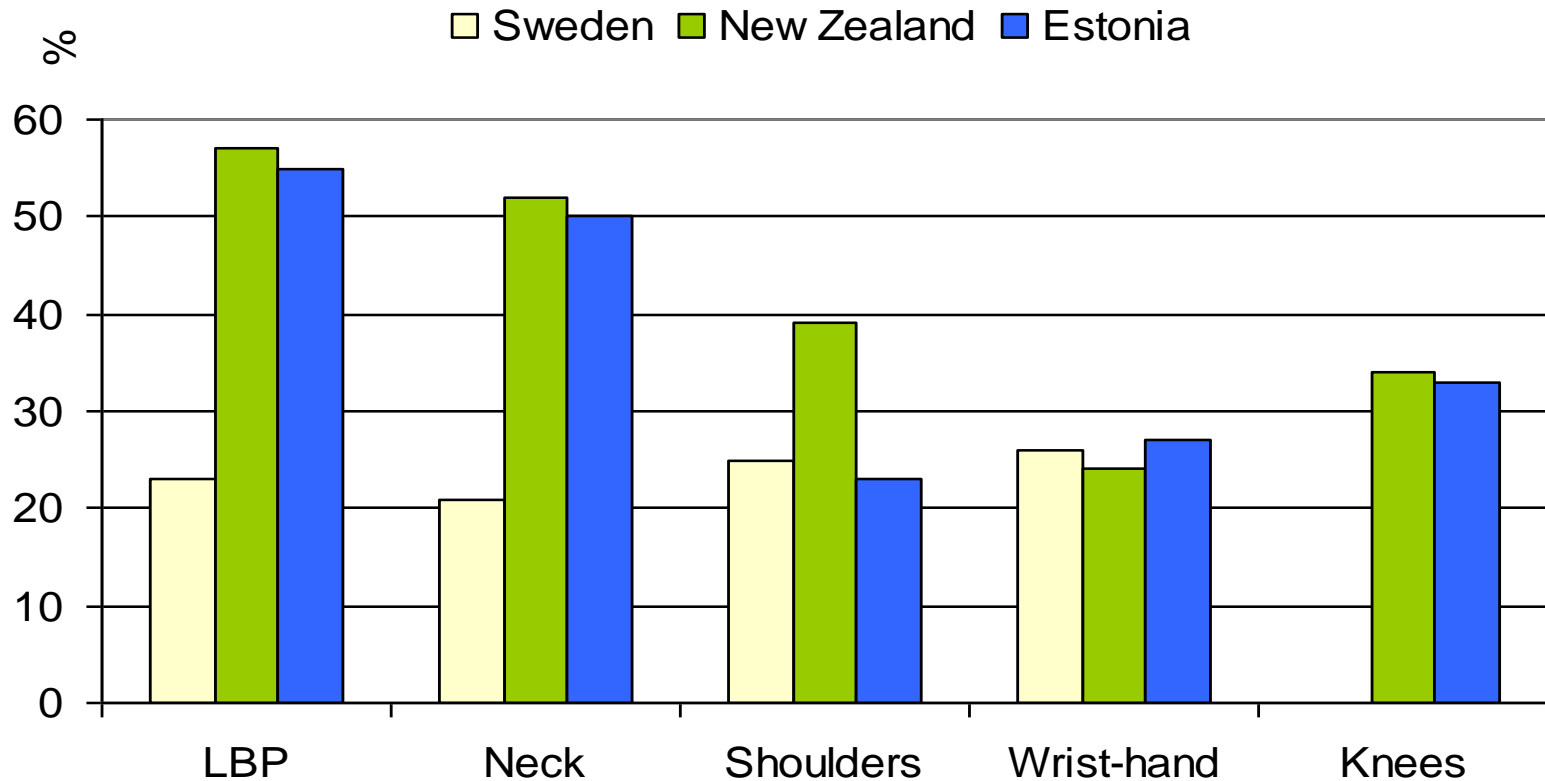
# MSD prevalence by body regions among office workers



Country	Neck	Shoulder	Elbow	Wrist	LBP
<b>Japan</b> (n=316) Matsudaira et al., 2011	47%	19%		6%	22%
<b>Estonia</b> (n=220) Oha, 2009	52%	28%	14%	32%	42%
<b>Germany</b> (n=1065) Klussmann et al., 2005	55%	38%	15%	21%	
<b>Finland</b> (n=298) Sillanpää et al., 2003	63%	24%	18%	35%	
<b>Mexico</b> (n=218) Ortiz-Hernandes et al., 1999			38%	47%	58% <sup>8</sup>



# Prevalence of MSD-12 by body regions among nurses in Sweden, New Zealand and Estonia





## Aim of study

- To describe prevalence of MS pain by body sites among office workers, nurses and caregivers.
- To learn, which factors influence on MSP by occupations
- To analyse multisite and disabling pain in context of work-related and other factors.
- To analyse pain duration and sickness absence by the occupations.
- To find relationships between MSP and job related risk factors.



# Study description

The international survey of work and health  
*Cultural and psycho-social influences of disability*

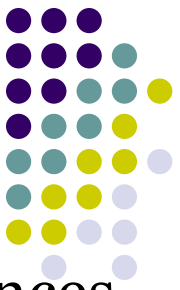
Project manager: Southampton University, UK

Participant countries: 21

1st round: 2008 Oct-Nov (2 master thesis)

Update: 2009 Oct-Dec

Intervention: 2012 – 2014 (2 PhD thesis)



# Target groups (n=1291)

- **Office workers:** Tartu University & Est Univ Life Sciences (n=415) (agreed persons)
  - **Nurses:** Tartu University Clinics (n=869) (random sample n=416, full time workers)
  - **Caregivers:** Estonian Rehabilitation Centres and Hospital Departments (n=612) (agreed persons n=460)
- 

## The criteria of selection of study group:

- Work in constraint position, monotonous work, repetitive movements
- At least 4 hrs/per day
- Age 20...59 years
- Service length in present position not less than 12 months



# Method

- Anonymous Questionnaire: Work and Health (Coggon, 2007)
  - GNQ, Karasek Model, Brief Symptom Inventory and SF-36
- In total 51 questions (with 2-5 sub-questions) in seven parts
  - **General data**
  - **Current work** (experience, work load, job related factors)
  - **MSDs by body parts in past 12 months & last month**
    - Low back, neck, shoulder, elbow, wrist/hand, knees
  - **Your health more generally (somatization, mood)**
  - Your views on the causes and prevention
  - Other people's pain
  - Maslach Burnout Inventory



# The questionnaire 1

- **Job-specific activities (yes/no) = physical demands**
  - the use of a keyboard either the other repeated movements of the wrist/fingers more than 4 hrs in total in a working day,
  - repeated bending and straightening of elbow for  $\geq 1$  hour,
  - working  $> 1$  hour with the hands above shoulders,
  - lifting weights of 25 kg or more by hand,
  - kneeling or squatting  $> 1$  hour in a working day.

# The questionnaire 2



- **Time demands (yes/no)**
  - Working under pressure to complete tasks by a fixed time
  - Piecework in which you are paid according to the number of articles or tasks you finish in the day
  - A target number of articles or tasks that you expected to finish in the day
  - Payment of a bonus if you make or finish more than an agreed number of articles/tasks in the day



# The Questionnaire 3

- **Job control** (often, sometimes, seldom, never)
  - How you do your work?
  - What you do at work?
  - Your work timetable and breaks?
- **Job support** (often, sometimes, seldom, never)
  - How often do you get help and support from your colleagues?
  - How often do you get help and support from your managers?





# Results

## Study group 1

- In total 643 participants received back the questionnaire
- The average response rate (RR) 56%
  - Office workers: n=220, RR 59%
  - Nurses: n=237, RR 57%
  - Caregivers: n=186, RR 52%

<b>Occupational Group</b>	<b>Subjects approached (n)</b>	<b>Filled the questionnaire (n)</b>	<b>Responders excluded (n)</b>	<b>Subjects analysed (n)</b>
Office workers	415	243	39	204
Registered nurses	416	237	16	221
Caregivers	460	218	55	163
<b>Total</b>	<b>1291</b>	<b>698</b>	<b>110</b>	<b>588</b>

# Study group 2



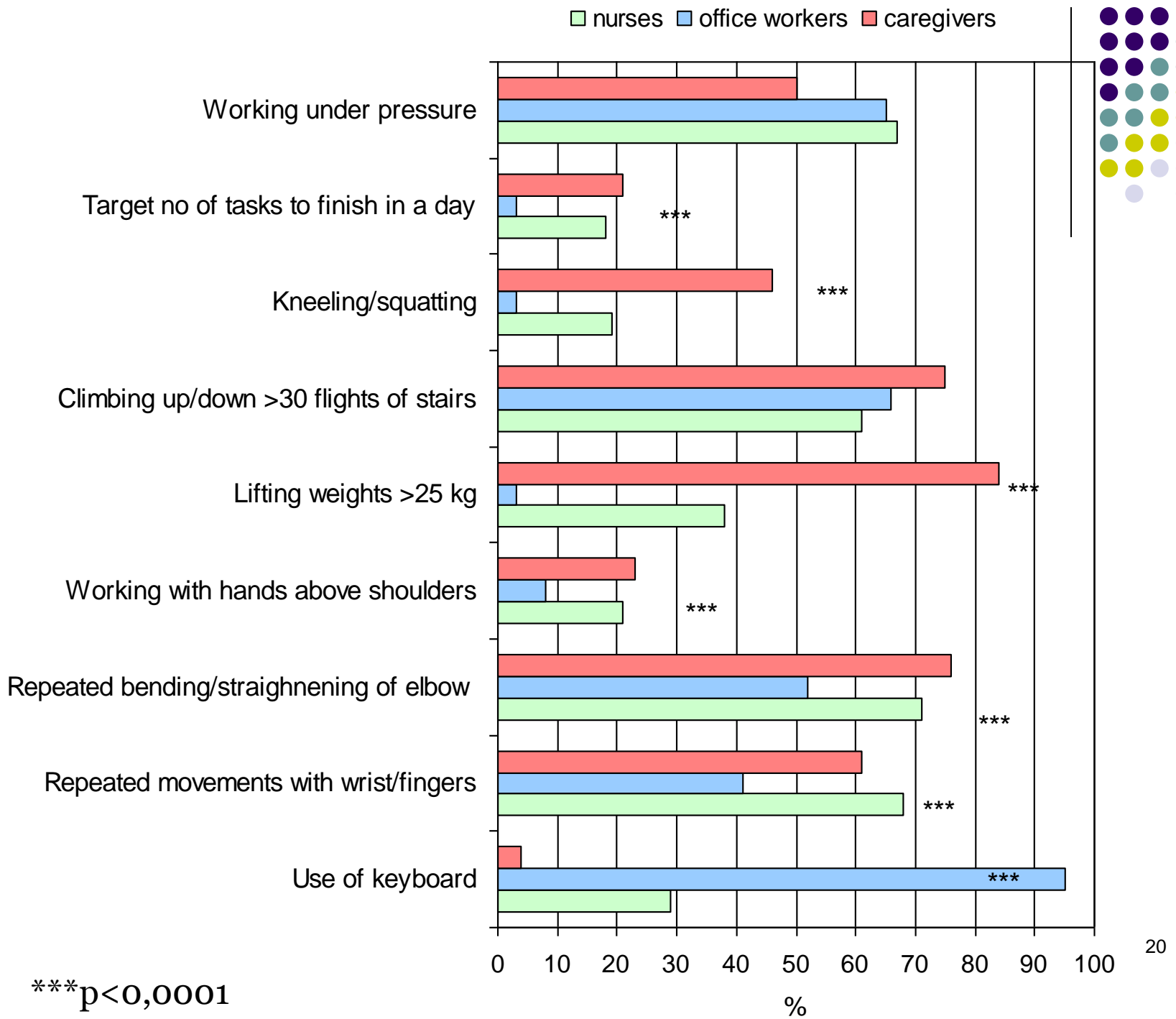
Demographic indicators	Office workers n (%)	Nurses n (%)	Caregivers n (%)	Group dif p
<b>Gender</b>				.000
Female	173 (85)	221 (100)	161 (99)	
Male	31 (15)	-	2 (1)	
<b>Age</b>	<b>40 (SD 10)</b>	<b>40 (SD 11)</b>	<b>47 (SD 11)</b>	.000
20-29	35 (17)	51 (23)	6 (4)	
30-39	65 (32)	78 (35)	38 (24)	
40-49	54 (27)	52 (24)	49 (30)	
50-59	48 (24)	40 (18)	<b>67 (42)</b>	
<b>Ethnic origin</b>				.000
Estonian	194 (96)	190 (86)	110 (68)	
Russian	5 (2)	25 (11)	45 (28)	
Other	3 (2)	6 (3)	6 (4)	

# Study group 3



Indicator	Office w n (%)	Nurses n (%)	Caregivers n (%)	p
<b>Working yrs</b>				<b>.000</b>
≥5	135 (66)	157 (71)	111 (69)	
1-5	69 (34)	63 (29)	51 (31)	
<b>Hrs in week</b>	<b>40.3 (SD5.0)</b>	<b>40.5 (SD 6.7)</b>	<b>44.5 (SD9.9)</b>	<b>.000</b>
≤40	174 (86)	176 (80)	83 (55)	
≥41	28 (14)	45 (20)	68 (45)	

# Work specific factors by occupations



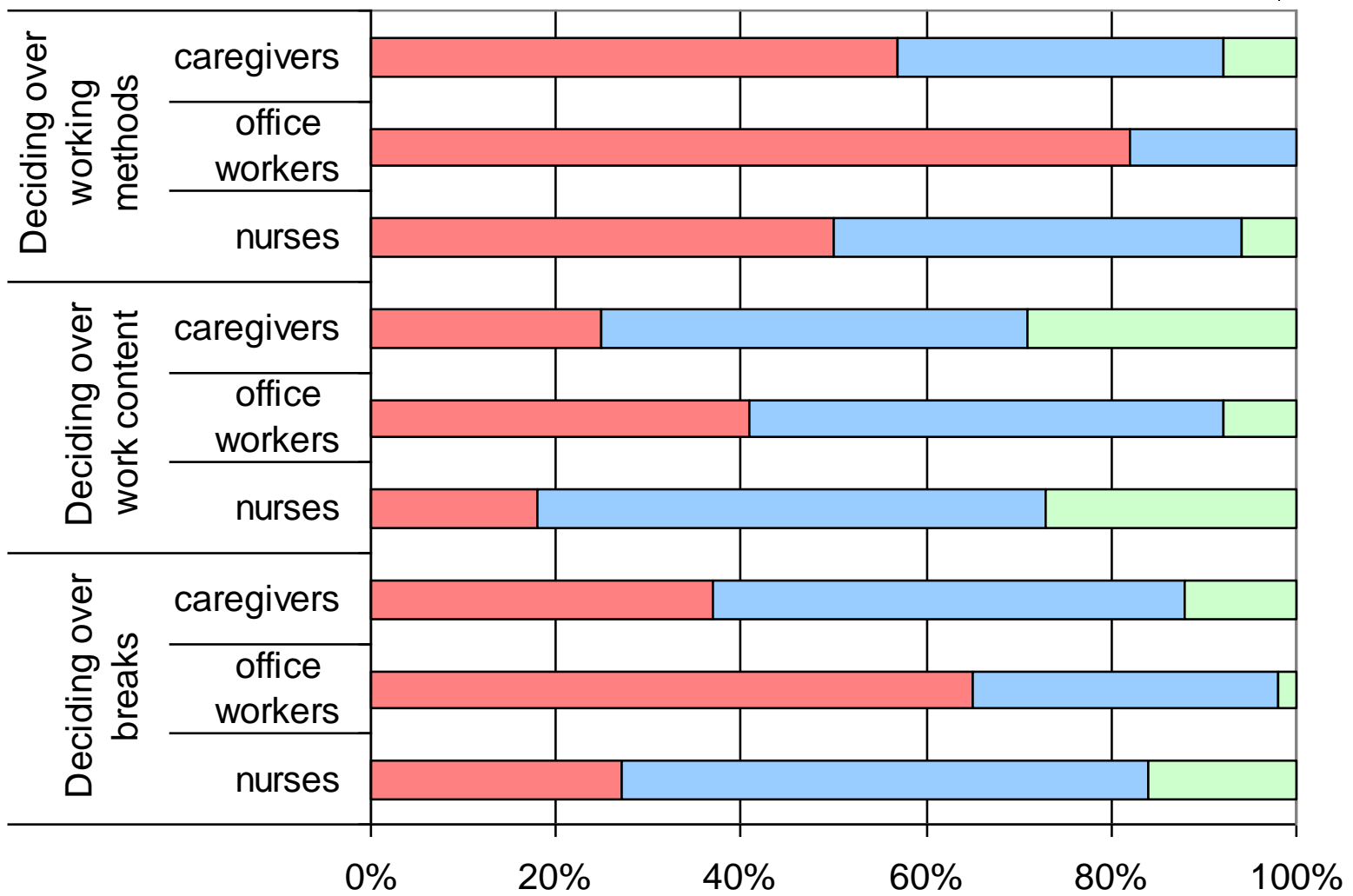
**Job characteristics by occup groups**

<b>Variable</b>	<b>Office w. n (%)</b>	<b>Nurses n (%)</b>	<b>Caregivers n (%)</b>	<b>Group dif p</b>
<b>Phys demands</b>				<b>0.000</b>
Low	129 (65)	89 (41)	39 (27)	
High	68 (35)	<b>128 (59)</b>	<b>106 (73)</b>	
<b>Time demands</b>				0.413
Low	72 (35)	65 (30)	53 (34)	
High	132 (65)	155 (70)	102 (66)	
<b>Job control</b>				0.000
Low	3 (1)	27 (12)	14 (9)	
High	200 (99)	193 (88)	145 (91)	
<b>Job support</b>				0.000
Low	72 (36)	22 (10)	49 (32)	
High	127 (64)	<b>197 (90)</b>	104 (68)	
<b>Job satisfaction</b>				0.004
Dissatisfied	12 (6)	15 (7)	24 (15)	
Satisfied	192 (94)	205 (93)	136 (85)	
<b>Job security</b>				0.001
Safe	42 (21)	36 (16)	52 (33)	
Unsafe	155 (79)	183 (84)	108 (67)	



# Autonomy: work content, time and activities

often seldom never



# Health status and health behavior by the occupations

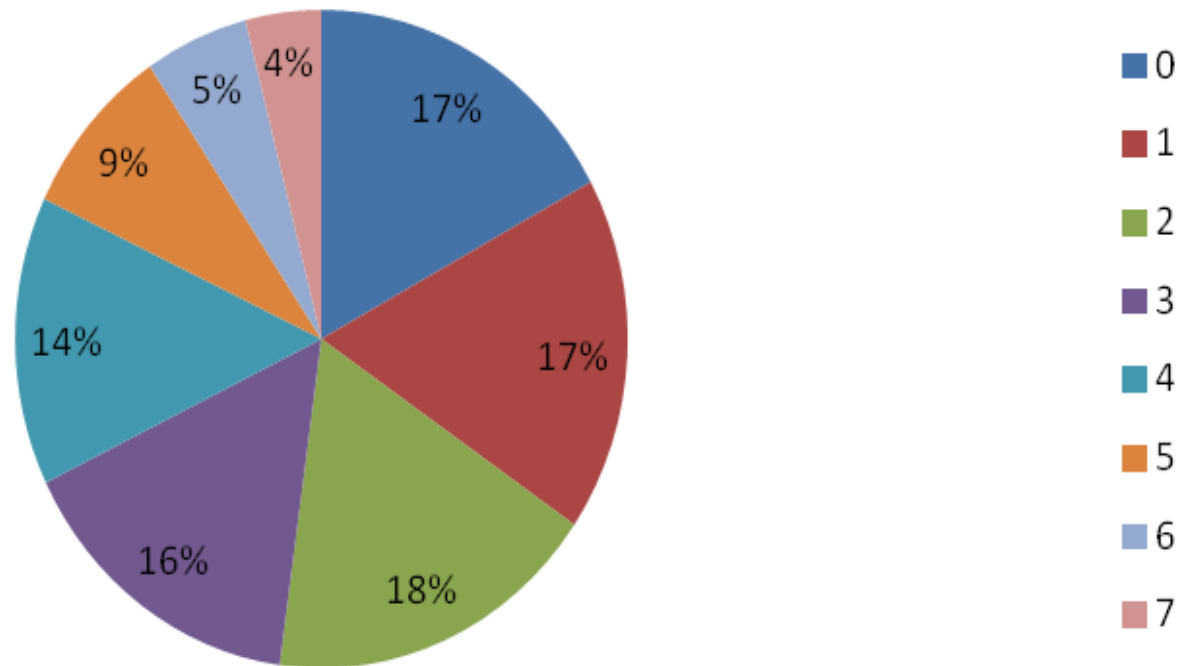


Variable	Office w. n (%)	Nurses n (%)	Caregivers n (%)	Stat diff p
<b>Somatization</b>				0.508
No complaints	34 (17)	32 (15)	28 (20)	
1–3 complaints	101 (52)	115 (54)	63 (45)	
4+ complaints	60 (31)	67 (31)	50 (35)	
<b>Emotional status</b>				0.067
Low	39 (19)	45 (20)	44 (29)	
Average	124 (61)	120 (55)	82 (55)	
High	40 (20)	54 (25)	24 (16)	
<b>Have ever smoked</b>				0.006
Yes	69 (34)	99 (45)	82 (50)	
No	134 (66)	122 (55)	81 (50)	
<b>Still smoking</b>				0.002
Yes	23 (33)	49 (50)	47 (60)	
No	42 (60)	48 (49)	32 (40)	

# Number of other complaints

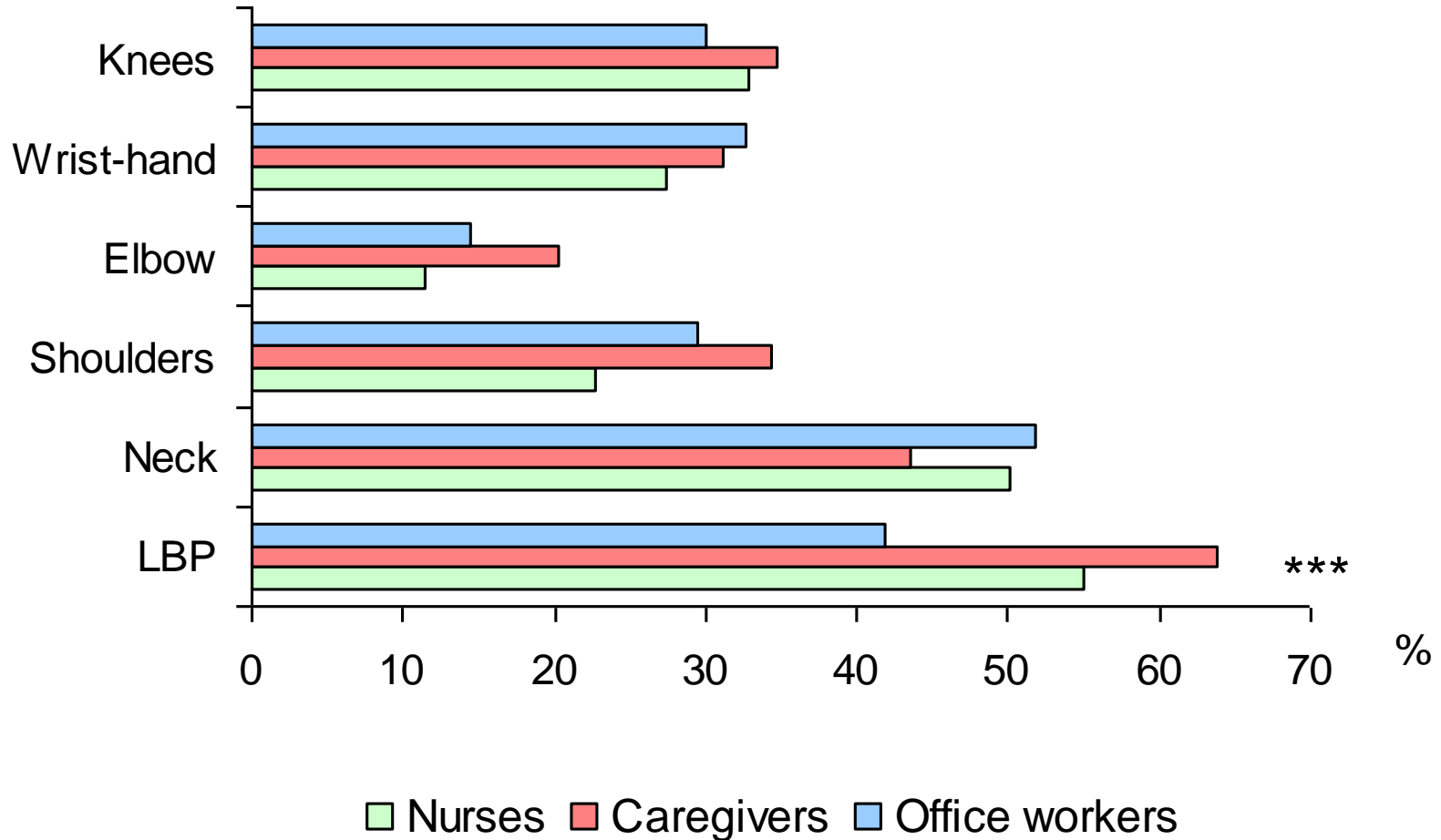


**Somatization. Number of complaints %**

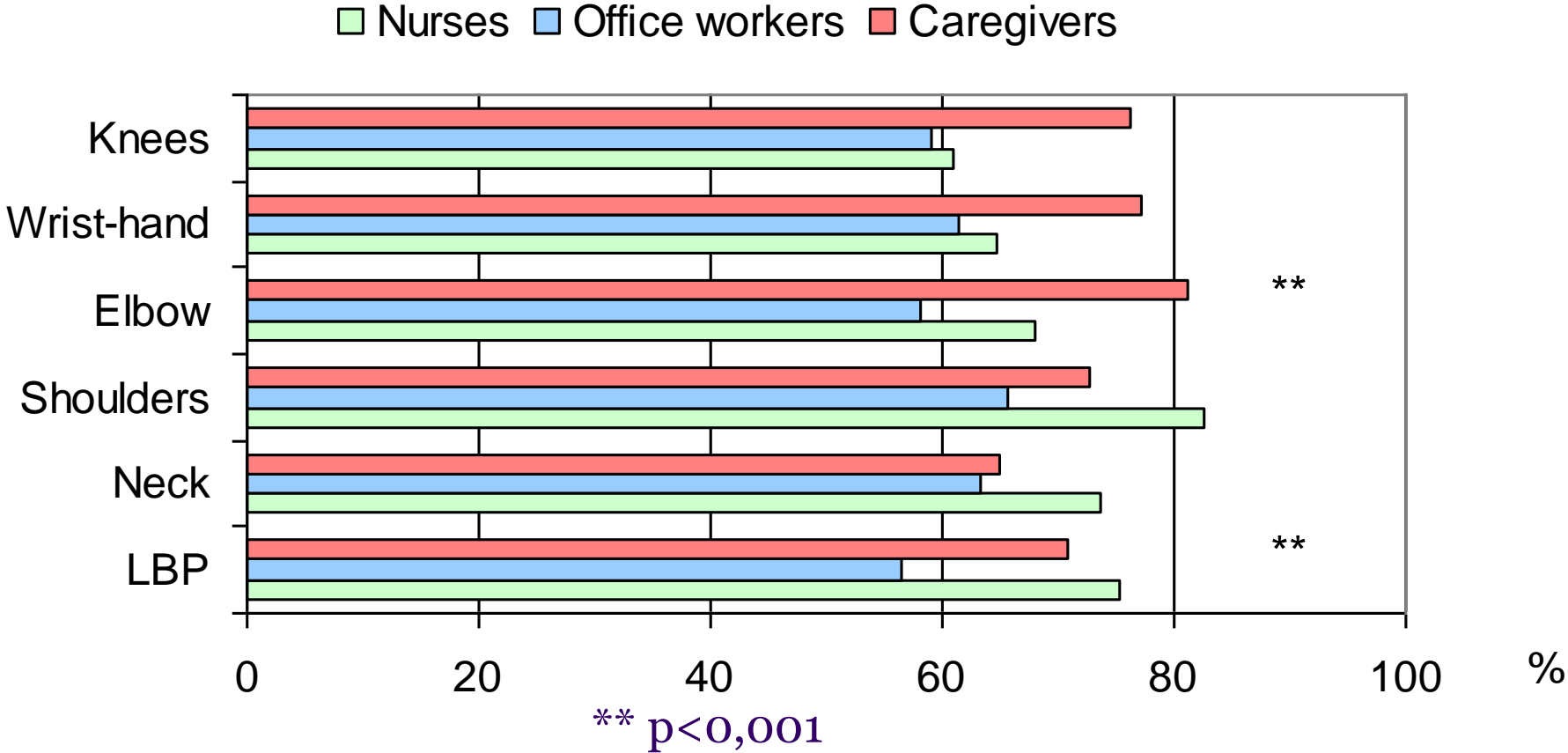




# MSD-12 localisation by occupation

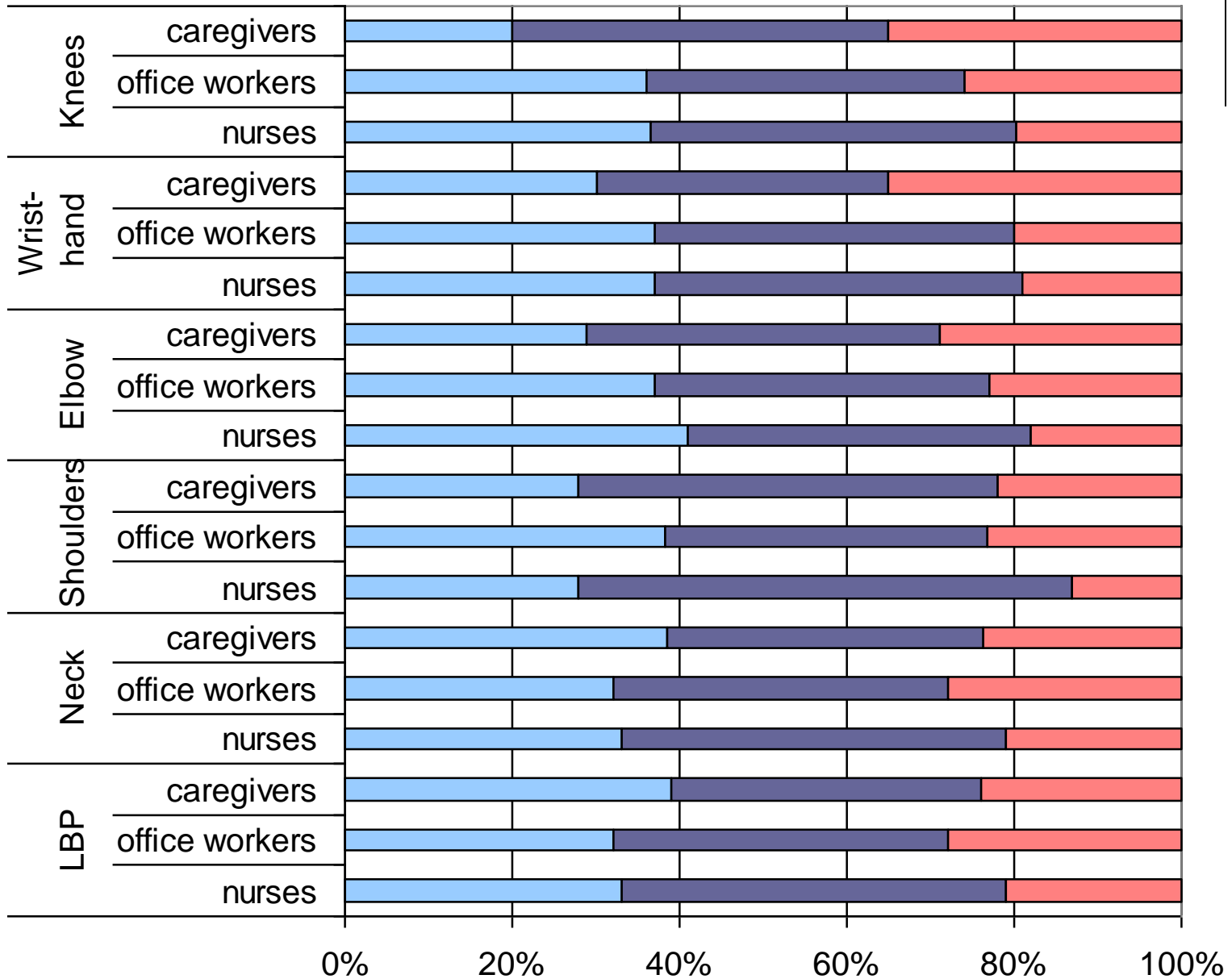
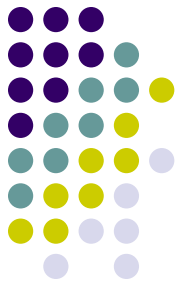


# MSD-1 by localisation by occupation

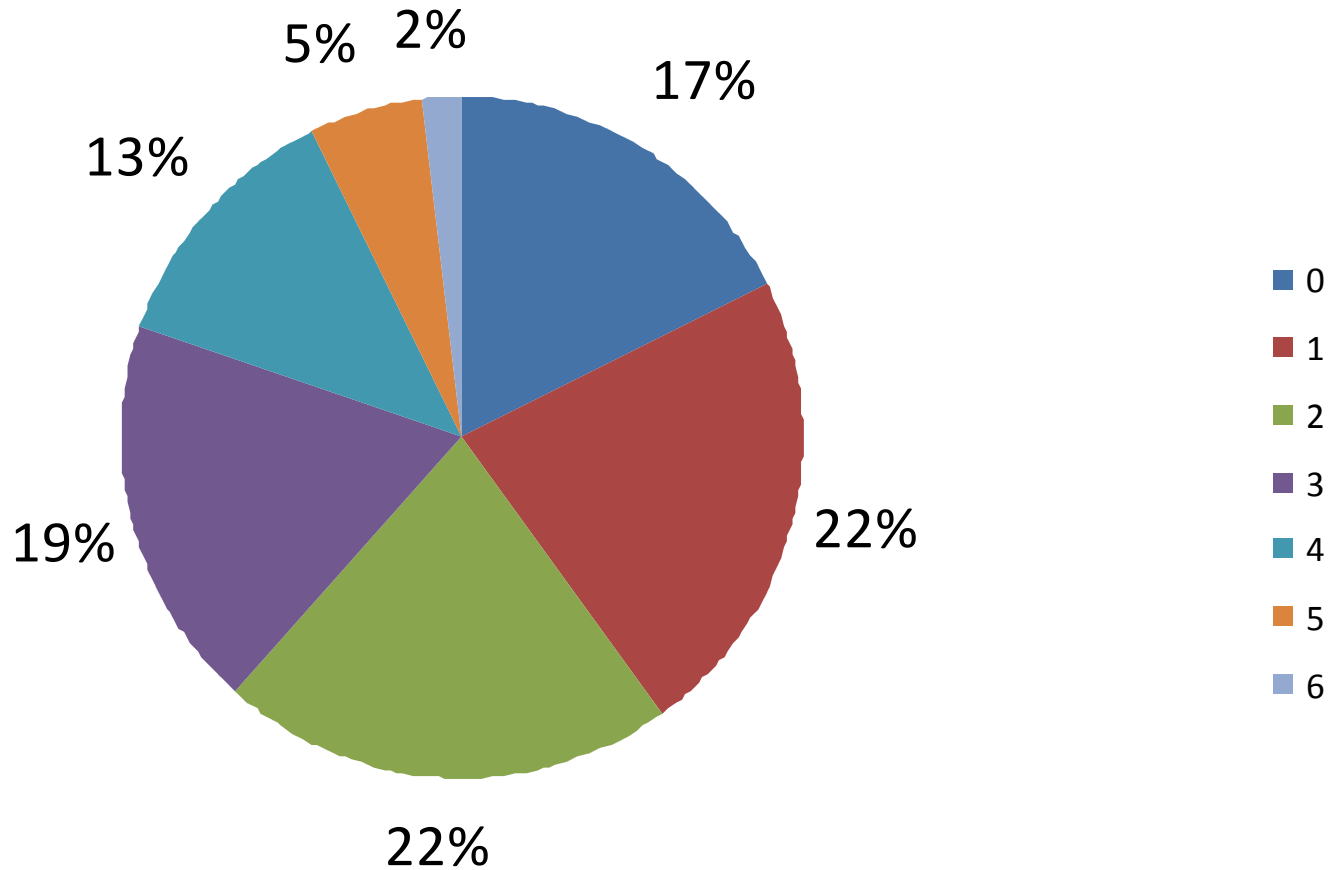


# Pain duration by body region & occupation

■ 1-6 days 
 ■ 1-4 weeks 
 ■ 1-12 months



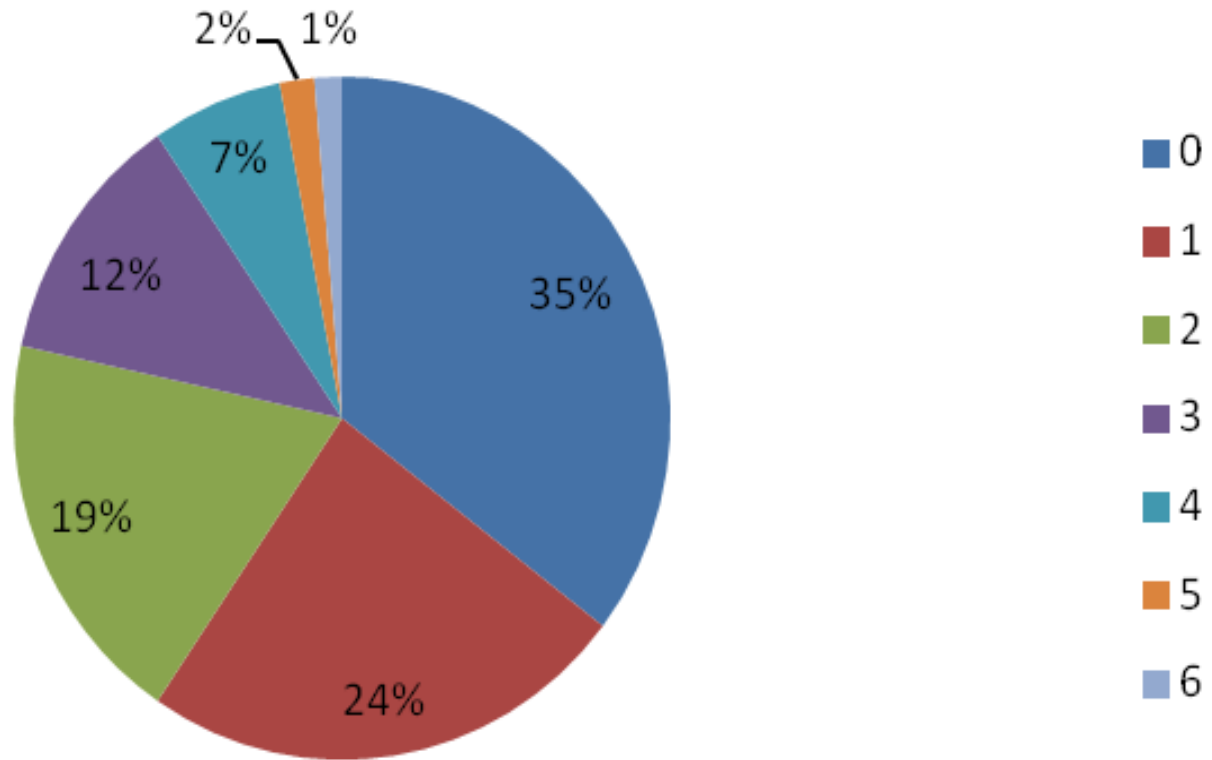
# Number of MSP sites during the past 12 months



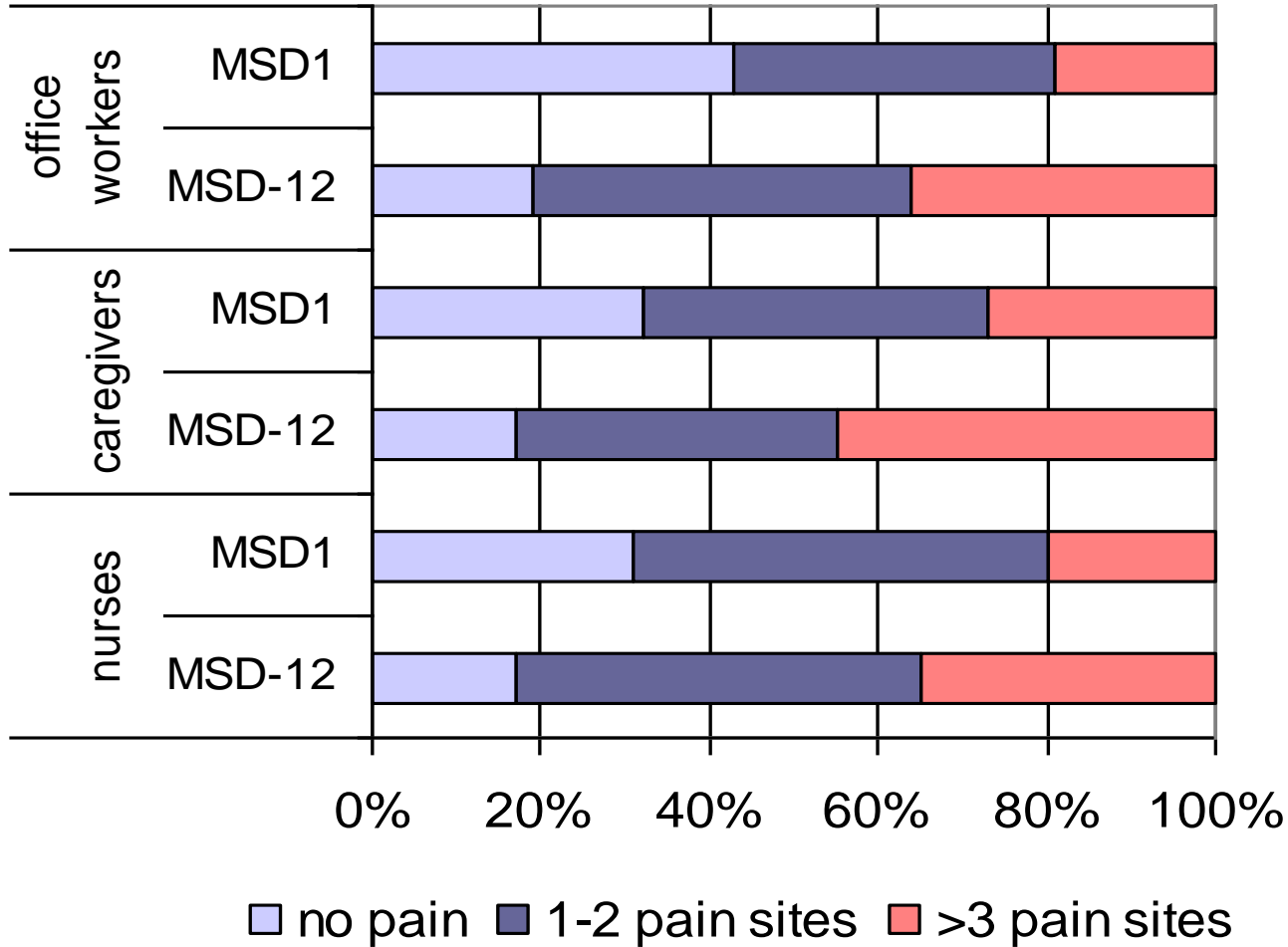
# Number of MSP sites in the last month



## multisite pain 1 month %



# Multiregional pain by body site number & occupation in past 12 and 1 months



# Disabling pain (MSD-1) by occupation

% of all respondents in the groups



Occupation group	Prevalence of disabling pain	
	n	%
Nurses	98	44,3
Office workers	68	33,3
Caregivers	96	58,9
<b>Total</b>	<b>262</b>	<b>44,6</b>

# Activity limitations by body regions

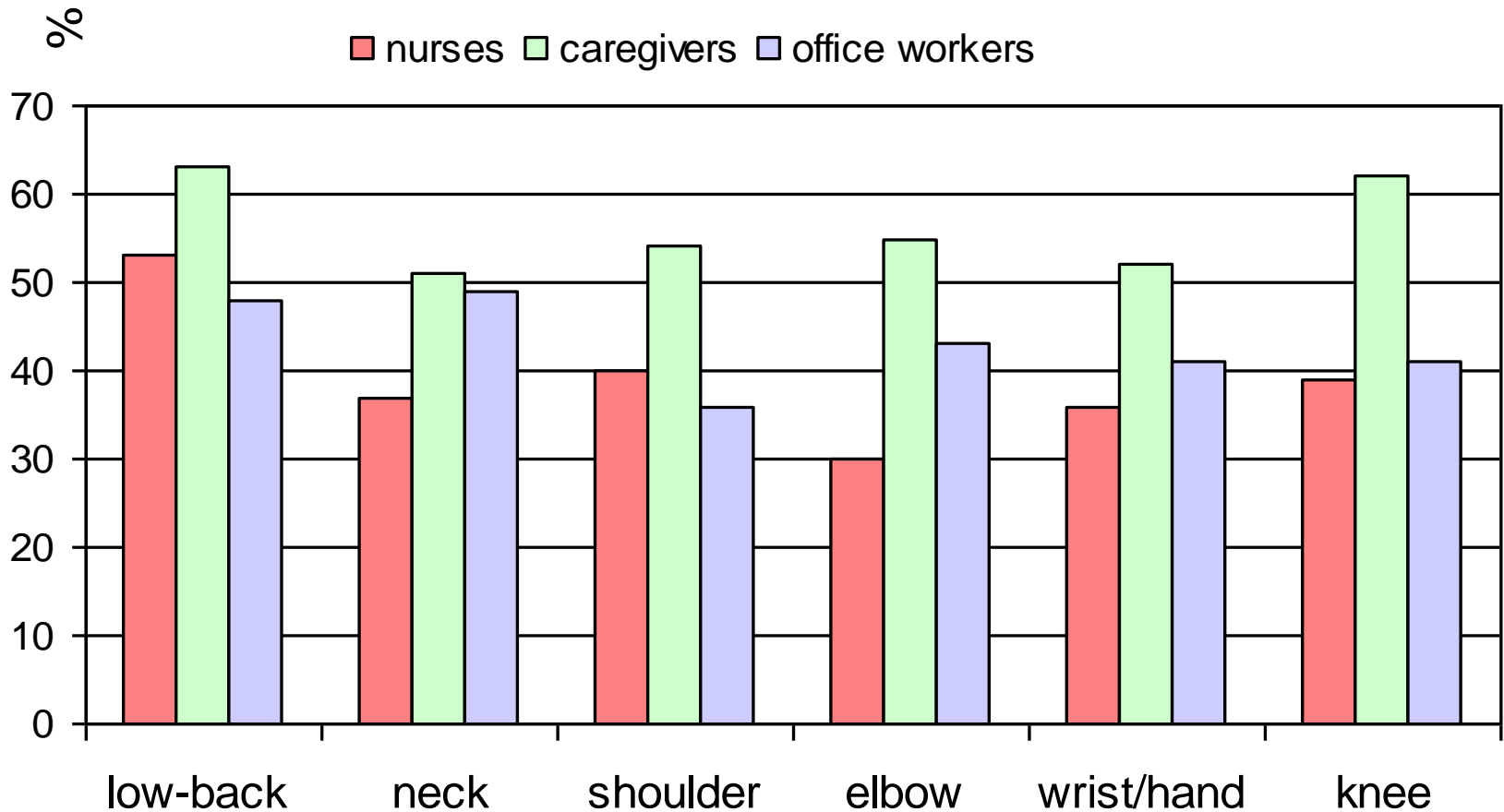


Pain site	Getting dressed		Housework	
	n	%	n	%
LBP	60	29,1	128	61,5
Shoulder	36	30,0	64	52,5
Wrist	20	16,4	64	55,1
Elbow	12	19,1	32	50,8
Neck	28	14,1	76	37,8
Knees	20	16,4	55	44,7

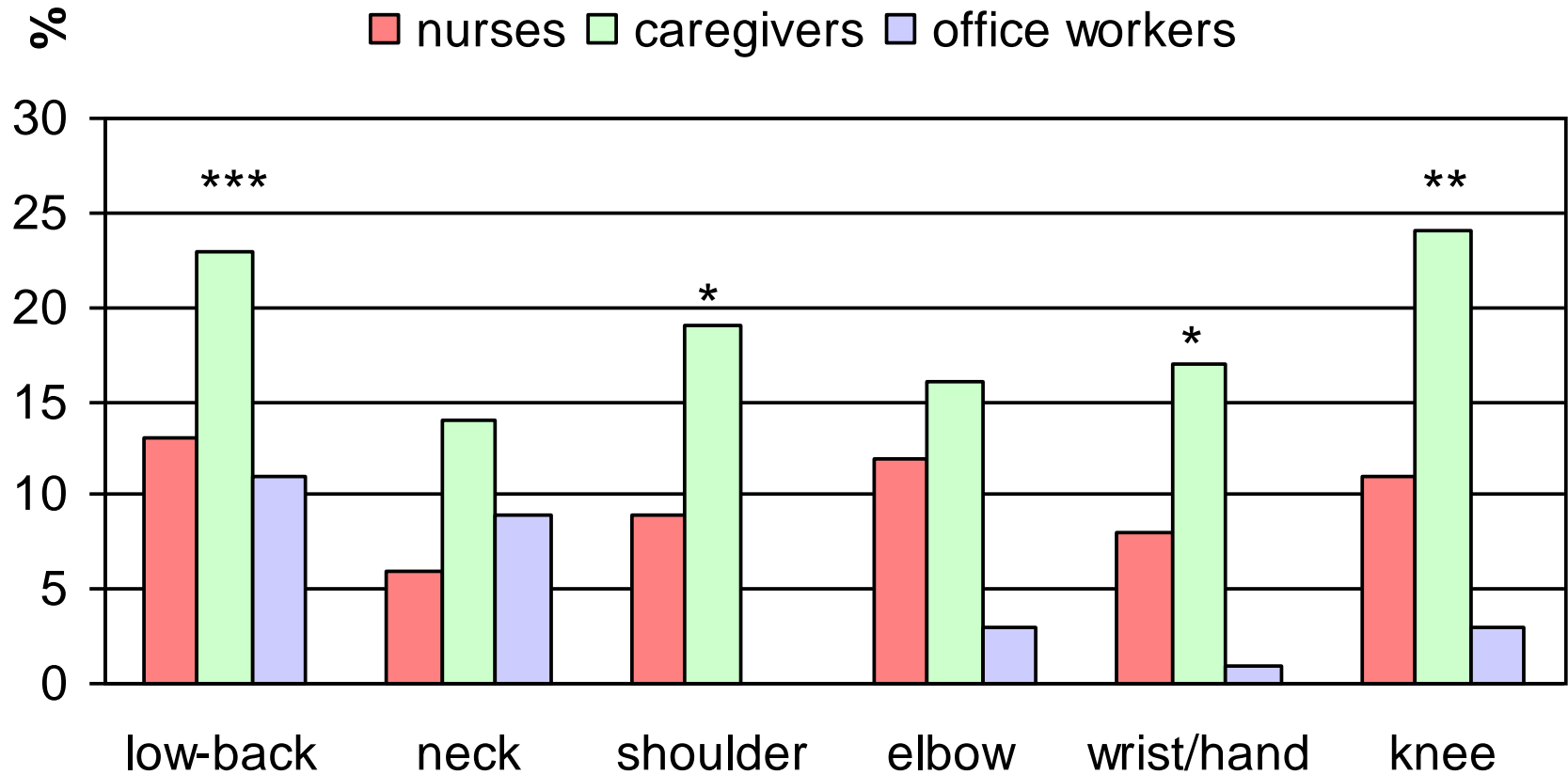
**% of those, who suffered from pain during last month**



# Consulted a doctor because of MSD-12, % of all respondents in different study groups



# Sick-leave because of MSD-12



\* $p < 0.04$ , \*\* $p < 0,009$ , \*\*\* $p < 0,004$



## Relationships ( $p < 0,01$ )

- LBP correlated positively with weight lifting (>25 kg) and kneeling
- Multisite pain correlated positively with high job control among nurses and office workers!
- Disabling pain correlated positively with
  - age of nurses;
  - physical and time demands among caregivers;
  - the other health complaints of all the study group
- Disabling pain was in negative correlation with
  - emotional status of all groups and
  - job satisfaction among office workers.



# Summary 1

- Most of participants (83%) reported MSP in last 12 months.
- The caregivers had older average age, higher physical demands and longer working hours.
- The job specific factors
  - for caregivers were weight-lifting >25 kg, repeated bending of elbow, kneeling/squatting > 1 hr per day
  - for nurses were repeated elbow bending
  - for office workers - using of key-board >4 hrs per day
- Office workers had the highest job control (99%) and autonomy in deciding over breaks and working methods (70-80%).
- The nurses reported the higher job support (90%) and job security (84%).

## Summary 2



- In the past 12 months high prevalence of neck and LBP was measured in all the groups;
- In the last month the higher prevalence of shoulder pain of nurses and elbow pain of caregivers were detected;
- Prevalence of MSP by body sites differed by occupations:
  - LBP-wrist-hand-knee pain more often reported by the caregivers;
  - LBP-neck- shoulder pain more often reported by the nurses;
  - Neck pain was dominative in office workers.
- Multiregional >3 sites (MSD-12) and disabling pain (MSD-1) are more often reported by caregivers;
- Usually MDS-s lasted more than 7 days, but sickness absence was low.



# Conclusions

- Prevalence of MSP was higher in the health care as to compare with office workers.
- Localisation, prevalence and seriousness correlated to job specific factors.
- Organisational and psychosocial risk factors are related to multisite and disabling pain.
- Improvent of awareness about causes of MSP could diminish sick leave in service sector.
- Effective prevention of MSP could improve quality and effectiveness of work and decrease costs of illnesses.

# Thank you for attention!

