# Epidemiological surveillance of lumbar disc surgery in the general population from a French region

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## Introduction/Aims

Lumbar disc-related disorders are a main cause of work-related osteo-articular morbidity [1]. To establish a system for epidemiological surveillance of these frequent disorders, lumbar disc surgery (LDS) was chosen as the indicator for this study. It was identified in the medical databases from public and private hospitals.

This surveillance system for LDS was set up in the five areas of the Pays de la Loire region (West Central France) using 2007-2008 hospital databases. In 2002-2003 [2], we had evaluated the feasibility of using these databases to estimate the incidence of LDS in the general population and to study its distribution according to age, gender, industrial sector and occupation.

The aim of this study was to describe the association between occupational categories and LDS and to evaluate their contribution to the occurrence of LDS.

## Methods

Epidemiological surveillance of LDS in the general population was set up at centres for spinal surgery in the Pays de la Loire region. Inpatients were included if they:
- were aged from 20 to 64 years;
- lived in this region;
- had undergone LDS in 2007 and 2008 in the participating centres.

Medical and work histories were obtained by postal questionnaire. The centres' databases identified a sample comprising 3,150 inpatients, including 2,628 aged 20-64 and 264 with unknown age.

Association between LDS and occupational categories was estimated according to relative risk adjusted for age (RRa). The contribution of the occupational categories to the occurrence of LDS was quantified with the population attributable fraction of risk (PAF). It is the proportion of cases occurring in the whole population which could be avoided if the occupational categories under consideration did not expose to an excess of risk of LDS.

Only the results for two areas (Loire-Atlantique and Maine-et-Loire) out of the five of the region are presented here, representing 72% of inpatients of the whole region study.

## Results

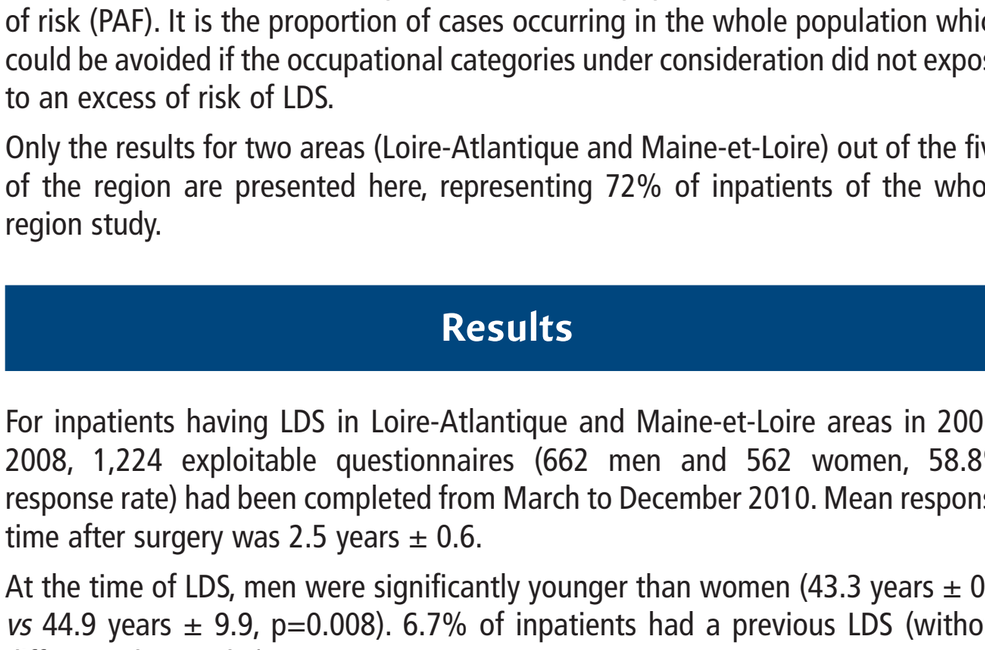
For inpatients having LDS in Loire-Atlantique and Maine-et-Loire areas in 2007-2008, 1,224 exploitable questionnaires (662 men and 562 women, 58.8% response rate) had been completed from March to December 2010. Mean response time after surgery was 2.5 years ± 0.6.

At the time of LDS, men were significantly younger than women (43.3 years ± 0.6 *vs* 44.9 years ± 9.9, p=0.008). 6.7% of inpatients had a previous LDS (without difference by gender).

### Occupational characteristics of LDS inpatients

99.4% of the inpatients stated that they had previously been employed in their life. Men were significantly more likely to be employed the year of the LDS than women (90.9% *vs* 80.6%, p<0.0001).

Figure — Distribution of inpatients having LDS in Loire-Atlantique and Maine-et-Loire by occupational category for each gender




Mean number of jobs in the working life was 4.4 ± 8.2 and mean time in the last job was 11.9 years (± 17.7). There is a high proportion of lower-grade white-collar workers in women and blue-collar workers in men (figure).

### Occupational categories associated with a high risk of LDS

For both genders, no significant excess risk of LDS was observed for farmers, professionals or technicians and associate professionals (table).

For women, excess risk of LDS was observed in both craftsmen and salesmen (RR=3.1 and RR=2.2 respectively) and in lower-grade white-collar workers (RR=1.7). The PAFs of LDS was 17% for the female lower-grade white-collar workers suggesting that about 17% of the cases occurring in this category of workers could be avoided if the excess risk of LDS could be eliminated.

For men, excess risk of LDS was observed in blue-collar workers (RR=1.9). The PAF of LDS was 20% for the male blue-collar workers.

Table — Incidence, age-adjusted relative risks and population attributable risk fractions (PAF) of lumbar disc surgery (PAF) according to occupational categories[a]

| | Incidence (‰)[b] | RRa [95% CI][c] | PAF (%) [range][d] |
|---|---|---|---|
| **Women** | | | |
| Farmers | 1.8 | 1.4 [0.6-3.3] | - |
| Craftsmen, salesmen and managers | 2.2 | 1.7 [1.1-2.8] | 1.5 [0.1-3.6] |
| - Craftsmen | 2.0 | 3.1 [1.4-6.9] | 1.7 [0.3-4.6] |
| - Salesmen | 2.4 | 2.2 [1.1-4.0] | 1.3 [0.2-3.4] |
| Professionals | 1.2 | 0.8 [0.5-1.1] | - |
| Technicians, associate professionals[e] | 1.4 | 0.9 [0.7-1.1] | - |
| Lower-grade white-collar workers | 2.1 | 1.7 [1.4-2.0] | 17.0 [11.0-23.1] |
| - Government and public services | 2.3 | 1.5 [1.2-1.9] | 5.0 [2.1-8.5] |
| - Corporate administrative services | 1.6 | 1.5 [1.0-2.1] | 2.6 [0.2-5.8] |
| - Personal services | 2.8 | 1.8 [1.4-2.3] | 5.8 [3.1-9.1] |
| Blue-collar workers | 1.9 | 1.2 [0.9-1.6] | - |
| **Men** | | | |
| Farmers | 2.2 | 1.3 [0.8-2.0] | - |
| Craftsmen, salesmen and managers | 1.7 | 1.0 [0.7-1.4] | - |
| Professionals | 1.5 | 0.7 [0.6-0.9] | - |
| Technicians, associate professionals[e] | 2.1 | 1.2 [1.0-1.4] | - |
| Lower-grade white-collar workers | 1.9 | 1.2 [0.9-1.5] | - |
| Blue-collar workers | 2.8 | 1.9 [1.6-2.2] | 19.8 [14.6-25.2] |
| - Skilled industrial | 4.0 | 2.3 [1.8-2.9] | 6.8 [4.4-9.7] |
| - Skilled craft | 3.9 | 2.6 [2.1-3.3] | 10.0 [7.1-13.4] |
| - Material handlers and related equipment | 3.0 | 2.0 [1.3-3.0] | 1.9 [0.6-3.9] |

*[a] Inpatients employed in the year of LDS (446 women and 594 men). [b] Incidence was calculated with data of Insee Census 2007. [c] RRa were computed when at least five cases were diagnosed with the whole sample in the year of LDS as reference group, 95% confidence interval. [d] This range was calculated using the upper and lower limits of RR at 95%. [e] Technicians and associate professionals perform mostly technical and related tasks and teach at certain educational levels.*

## Discussion/Conclusion

Participating surgery centers of the five areas of the Pays de la Loire region represent 90% of rachis surgery activity of the region.

Excess risk of LDS was observed in craftsmen, salesmen and managers and lower-grade white-collar workers for women and in blue-collar workers for men. Preventive actions could target these occupational categories as priorities.

Incidence, RRa and PAFs will be calculated on the whole regional sample and:
- for more detailed occupations;
- for industry sectors;
- taking into account major individual risk factors (tallness, overweight…).

## References

[1] Lombalgies en milieu professionnel. Quels facteurs de risque et quelle prévention ? Expertise collective Inserm, Paris, 2000. 151 p.

[2] Roquelaure Y, Fouquet N, Ha C, Bord E, Surer N, Petit Le Manac'h A *et al.* Epidemiological Surveillance of Lumbar Disc Surgery in the General Population: a Pilot Study in a French region. Joint Bone Spine. 2011 May;78(3):298-302.

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