Précarité-fragilité

et

Réanimation

Journée OUTCOMEREA – 30 Nov 2023

Pr B Guidet
Médecine intensive réanimation, St Antoine, Paris

Introduction

- European Typology on Homeless and Housing Exclusion (2007)
  sans-abri, sans-logement, logement précaire et logement inadéquat
- En France
  - Enquête INSEE 2001: 86 500 personnes
  - Rapport Fondation Abbé Pierre février 2013: 685 142 personnes
- Espérance de vie limitée chez les sans-abri (Europe, Canada, USA)
  Hibbs et al. NEJM 1994, Hwang JAMA 2000, Nordentoft et al. BMJ 2003, Roy et al. JAMA 2004, Hwang et al. BMJ 2009, Nielsen et al. Lancet 2011, Baggett et al. JAMA Int Med 2013)
- Plus de consultations aux urgences
  Kushel et al. JAMA 2001, Black et al. BMJ 1991, Pearson et al. Ann Emerg Med 2007
- Plus d'hospitalisations
  Martell et al. Ann Int Med 1992, Kushel et al. JAMA 2001, Salit et al. NEJM 1998
- Plus de réhospitalisations non programmées
  Doran et al. Med Care 2013
- Hospitalisations plus longues
  Salit et al. NEJM 1998, Hwang et al. Med Care 2011

En réanimation

- Moins de procédure et mortalité plus élevée chez les patients américains sans couverture sociale
  - Danis et al. CCM 2006, Fowler et al. AJRCCM 2010, Lyon et al. AJRCCM 2011
- Association faible niveau socio-économique et surmortalité ?
  - Latour et al. Journal Clin Epidemiol 1991, Welch et al. J Crit Care 2010,
  - Ho et al. Med J Austr 2008, Findlay et al. ICM 2000 , Zager et al. Chest 2011
- Faible niveau socio-économique associé à une gravité plus importante

    Latour et al. Journal Clin Epidemiol 1991,

    Ho et al. Med J Austr 2008,

    Bein et al. ICM 2012

Homeless Patients in the ICU: An Observational Propensity-Matched Cohort Study

Naïke Bigé, MD, PhD[1,2]; Gilles Hejblum, PhD[3,4,5]; Jean-Luc Baudel, MD[1]; Annie Carron[6];
Sophie Chevalier[7]; Claire Pichereau, MD, PharmD[1,2]; Eric Maury, MD, PhD[1,3,4]; Bertrand Guidet, MD[1,3,4]
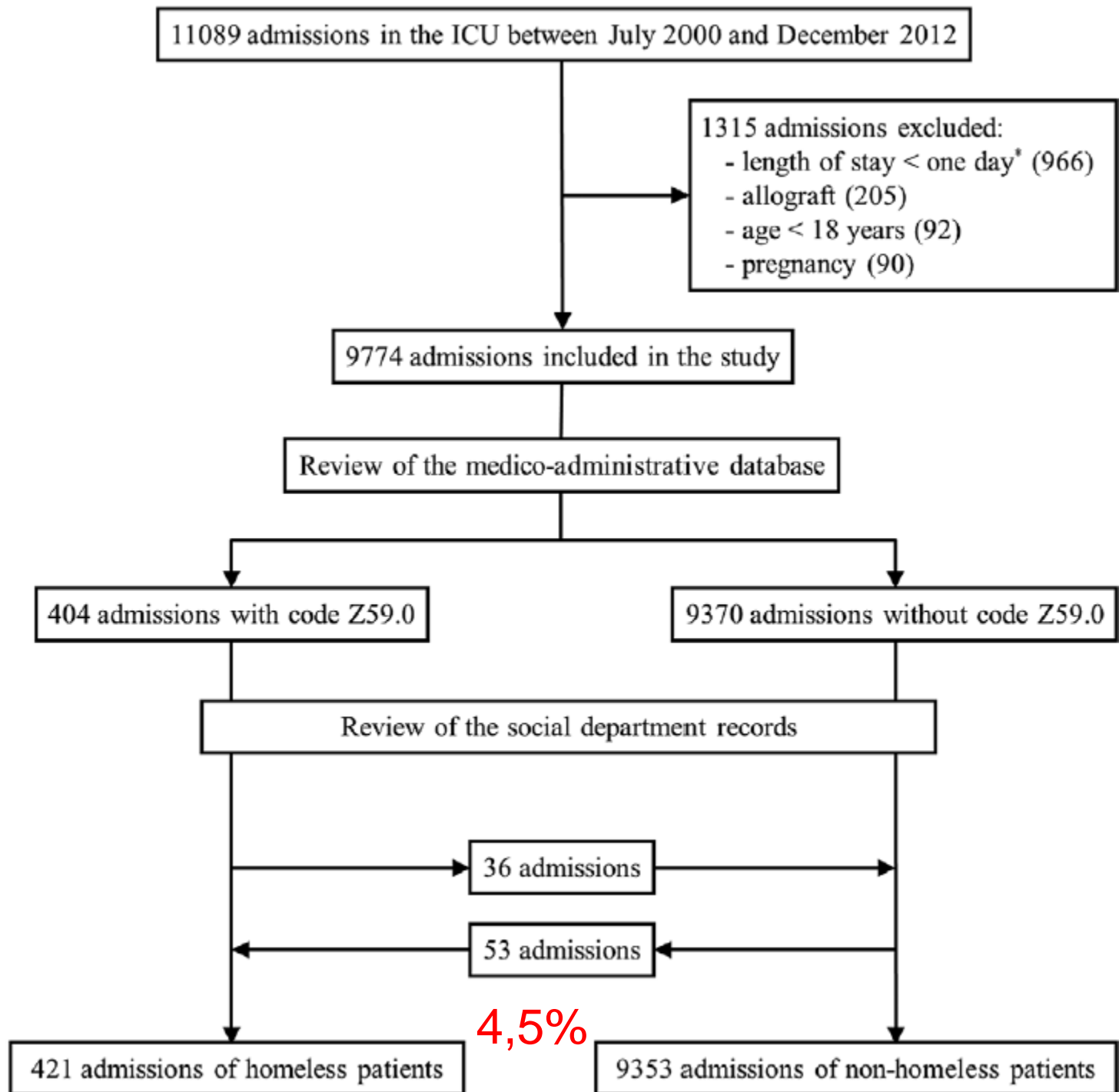
Matériels et méthodes

- Etude rétrospective monocentrique

- Données collectées prospectivement
  - Codage PMSI du service avec analyse de la base de l'hôpital
  - Dossiers du service social de l'hôpital

- Admissions de Juillet 2000 à Décembre 2012

- Exclusion:
  - Age < 18 ans
  - Grossesse
  - Allogreffe
  - Séjour < 1 journée sans décès afin d'exclure les procédures programmées

Matériels et méthodes

- « SDF » définis selon la typologie européenne
  - Rue, lieu public, squat
  - SAMU social
  - Hôtel
  - Foyer
  - Hébergement chez un tiers

- « SDF » identifiés par le croisement de deux sources d'information
  - code « générique sans abri » : Z59.0
  - dossiers sociaux

- Pour la comparaison mortalité et durée de séjour
  - Appariement par un score de propension sur diagnostic à l'admission en réanimation, IGS II, âge, sexe, date d'admission en réanimation.
  - 4 séjours non « SDF » pour 1 séjour « SDF »

11089 admissions in the ICU between July 2000 and December 2012

1315 admissions excluded:
- length of stay < one day* (966)
- allograft (205)
- age < 18 years (92)
- pregnancy (90)

9774 admissions included in the study

Review of the medico-administrative database

404 admissions with code Z59.0

9370 admissions without code Z59.0

Review of the social department records

36 admissions

53 admissions

4,5%

421 admissions of homeless patients

9353 admissions of non-homeless patients

Caractéristiques des patients

	Not homeless	Homeless	P
Total	9353	421	
Male - no. (%)	5361 (57.3%)	375 (89.1%)	<0.0001
Age (years) - median [IQR]	62 [46;76]	49 [43;57]	<0.0001
Source of ICU admission			<0.0001
Direct admission - no. (%)	3492 (37.3%)	194 (46.1%)	
Emergency department- no. (%)	2581 (27.6%)	127 (30.2%)	
Ward - no. (%)	3280 (35.1%)	100 (23.7%)	
SAPS II - median [IQR]	37 [25;52]	37 [24;50]	0.99
SAPS II without age points - median [IQR]	25 [15;41]	29 [17;43]	0.0014

Main diagnosis at ICU admission

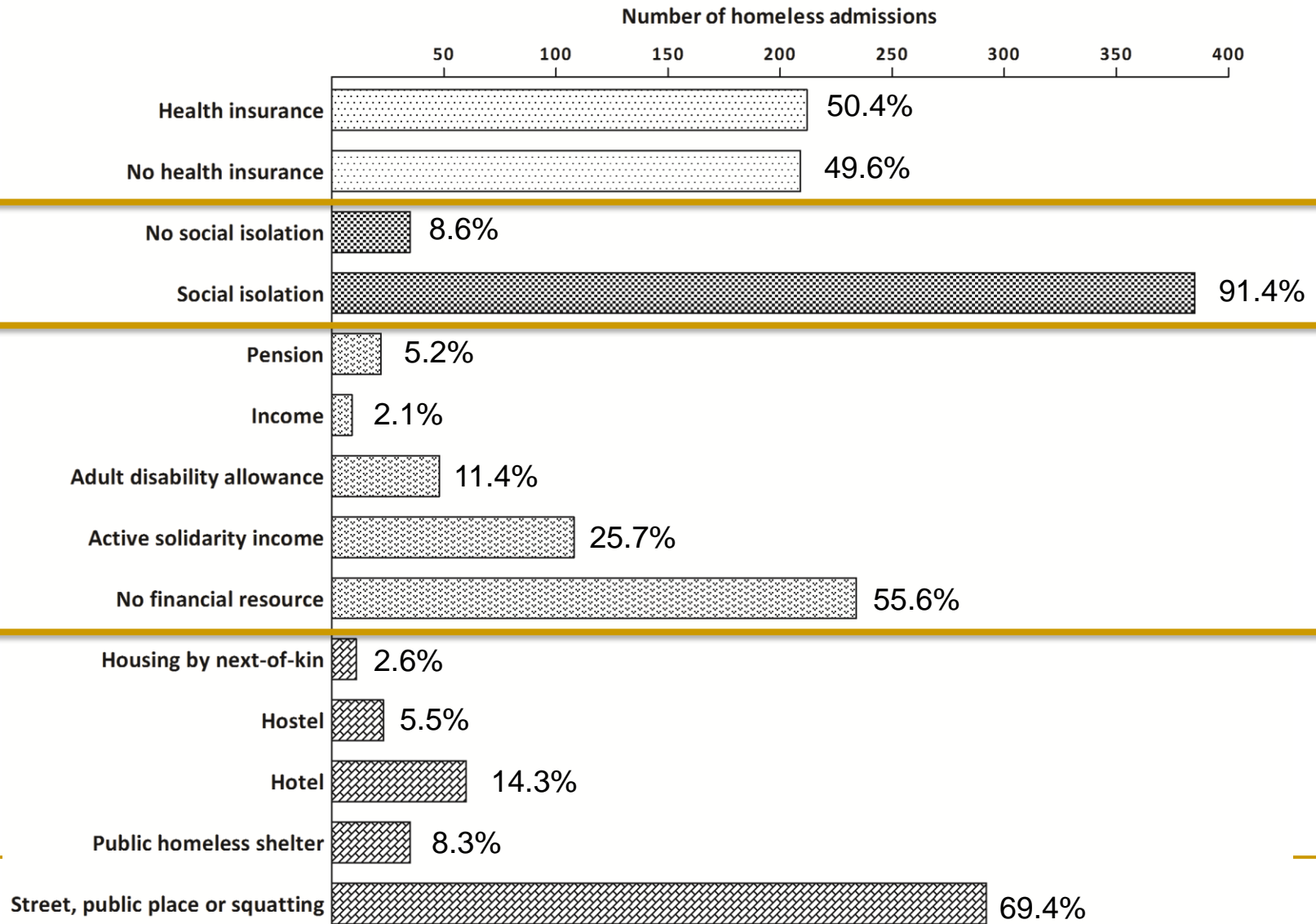|	Not homeless	Homeless	P
Diagnosis at ICU admission			<0.0001
Acute respiratory failure	3204 (34.3%)	140 (33.3%)	
Coma and disorders of consciousness	1955 (20.9%)	145 (34.4%)	
Septic shock and severe sepsis	725 (7.8%)	26 (6.2%)	
Pleural effusion, pneumothorax and hemothorax	637 (6.8%)	11 (2.6%)	
Hemorrhagic shock and acute hemorrhage	521 (5.6%)	15 (3.6%)	
Acute renal failure	484 (5.2%)	16 (3.8%)	
Cardiac arrest	440 (4.7%)	18 (4.3%)	
Metabolic disorders	278 (3%)	12 (2.9%)	
Cardiogenic pulmonary oedema	128 (1.4%)	3 (0.7%)	
Cardiogenic shock	107 (1.1%)	3 (0.7%)	
Cardiovascular, others	142 (1.5%)	3 (0.7%)	
Hypothermia	12 (0.1%)	13 (3.1%)	
Miscellaneous	720 (7.7%)	16 (3.8%)	

Suppléances d'organe

	Not homeless	Homeless	P
Invasive mechanical ventilation - no. (%)	3484 (37.3%)	187 (44.4%)	0.0033
Vasoactive drugs - no. (%)	2386 (25.5%)	108 (25.6%)	0.95
Renal replacement therapy - no. (%)	547 (6.9%)	22 (5.2%)	0.2
Massive transfusion - no. (%)	246 (2.6%)	17 (4.0%)	0.089
Number of organ supports			0.49
0 - no. (%)	4778 (51.1%)	203 (48.2%)	
1 - no. (%)	2789 (29.8%)	124 (29.5%)	
2 - no. (%)	1423 (15.2%)	74 (17.6%)	
3 - no. (%)	324 (3.5%)	18 (4.3%)	
4 - no. (%)	39 (0.4%)	2 (0.4%)	

Résultats

Feature	Homeless Admissions	Nonhomeless Admissions	p
	n = 421	n = 9,353	
ICU death (%)	80 (19.0)	1,834 (19.6)	0.8
ICU length of stay among survivors (d, median [IQR] and mean [95% CI])	4 (3–7) and 6.4 (5.7–7.2)	4 (3–6) and 5.9 (5.7–6.1)	0.27
Hospital death (%)	87 (20.7)	2,251 (24.1)	0.11
Hospital length of stay among survivors (d, median [IQR] and mean [95% CI])	11 (5–23) and 19.1 (16.5–22.1)	10 (4–22) and 17.3 (16.8–17.8)	0.13
Destination of survivors after hospital discharge (%)			0.0056
Home, street, or other housing places	227 (68)	4,239 (59.7)	
Other hospital	105 (31.4)	2,743 (38.6)	
Rehabilitation center	2 (00.6)	120 (01.7)	

Indices de précarité

Number of homeless admissions

Category	Percentage
Health insurance	50.4%
No health insurance	49.6%
No social isolation	8.6%
Social isolation	91.4%
Pension	5.2%
Income	2.1%
Adult disability allowance	11.4%
Active solidarity income	25.7%
No financial resource	55.6%
Housing by next-of-kin	2.6%
Hostel	5.5%
Hotel	14.3%
Public homeless shelter	8.3%
Street, public place or squatting	69.4%

Mortalité selon indices de précarité
(analyse univariée)

	Total	ICU death – no. (%)	Hospital death – no. (%)
Health insurance			
Yes	212 (50.4%)	31 (14.6%)	34 (16%)
No	209 (49.6%)	49 (23.4%) *	53 (25.4%) *
Social isolation			
No	36 (8.6%)	7 (19.4%)	10 (27.8%)
Yes	385 (91.4%)	73 (19%)	77 (20%)
Financial resources			
Pension	22 (5.2%)	2 (9.1%)	2 (9.1%)
Income	9 (2.1%)	0	0
Adult disability allowance	48 (11.4%)	6 (12.5%)	8 (16.7%)
Active solidarity income	108 (25.7%)	17 (15.7%)	17 (15.7%)
None	234 (55.6%)	55 (23.5%) **	60 (25.6%)**
Living place			
Housing by next-of-kin	11 (2.6%)	1(9.1%)	3 (27.3%)
Hostel	23 (5.5%)	0	1 (4.3%)
Hotel	60 (14.3%)	4 (6.7%)	5 (8.3%)
Public homeless shelter	35 (8.3%)	2 (5.7%)	4 (11.4%)
Street, public place or squatting	292 (69.4%)	73 (25%)***	74 (25.3%)***

Mortalité selon indices de précarité
## (analyse multivariée incluant âge, sexe, IGSII, statut SDF)

	ICU mortality		Hospital mortality	
	OR [CI 95%]	P	OR [CI 95%]	P
Age	1.00 [0.97-1.04]	0.84	1.01 [0.98-1.04]	0.59
Gender (male)	1.19 [0.45-3.46]	0.73	1.44 [0.56-4.04]	0.46
SAPS II	1.10 [1.08-1.12]	<0.0001	1.09 [1.07-1.12]	<0.0001
No health insurance	1.81-0.74-4.53]	0.20	1.76 [0.76-4.18]	0.19
Social isolation	0.56 [0.18-1.89]	0.33	0.38 [0.14-1.07]	0.06
No financial resource	0.68 [0.27-1.73]	0.41	0.97 [0.41-2.35]	0.95
Living in street, public space or squatting	7.31 [2.74-22.58]	0.00019	2.94 [1.30-7.10]	0.012

Durée de séjour

(analyse univariée)

	Not homeless - no. (%)	Homeless - no. (%)
ICU LOS		
before matching	6.2 ± 8	6.6 ± 7.6
after matching	5.8 ± 7.7	6.6 ± 7.6
Hospital LOS		
before matching	17 ± 21.8	17.7 ± 24
after matching	14.7 ± 18.9	17.7 ± 24.1 *

Mortalité et DMS après ajustement
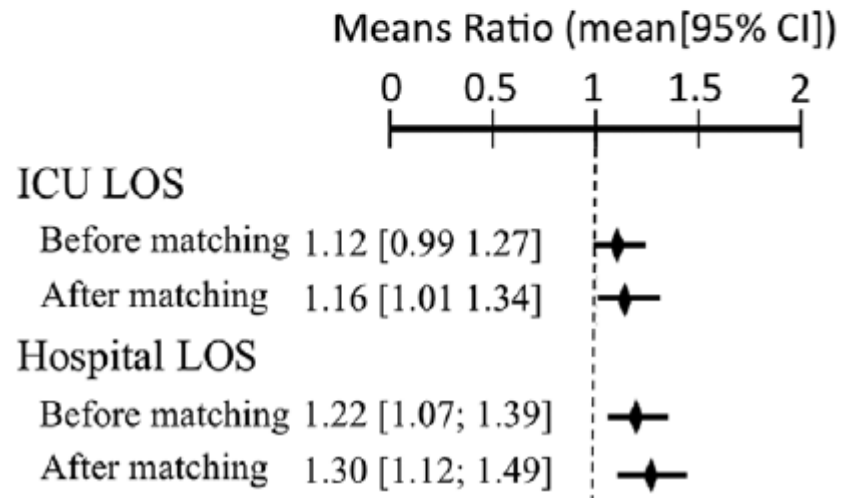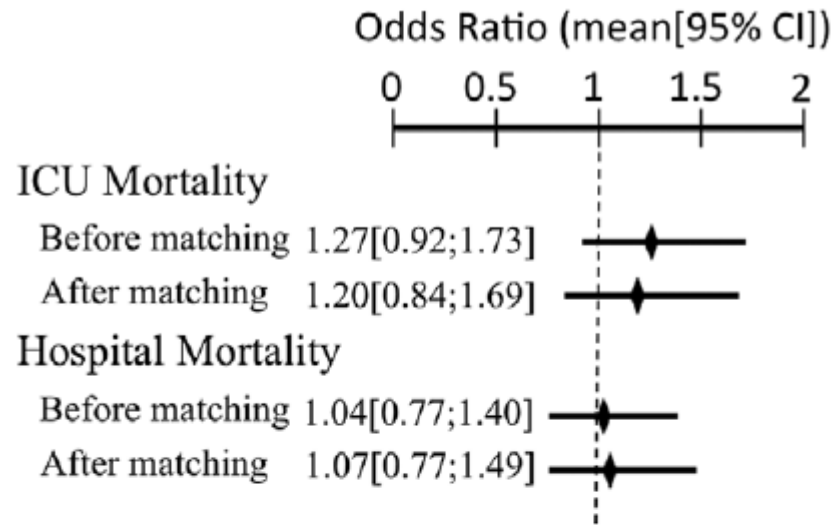
Conclusion

- \> 4% admissions concernent des patients « SDF »
- Plus d'hommes, plus jeunes, plus de coma
- Même intensité de soins
- Mortalité équivalente en réanimation et à l'hôpital
- Mais au sein de la population « SDF »: mortalité plus élevée chez les patients vivant dans la rue
- Durée de séjour hospitalière plus longue

Pas de perte de chance

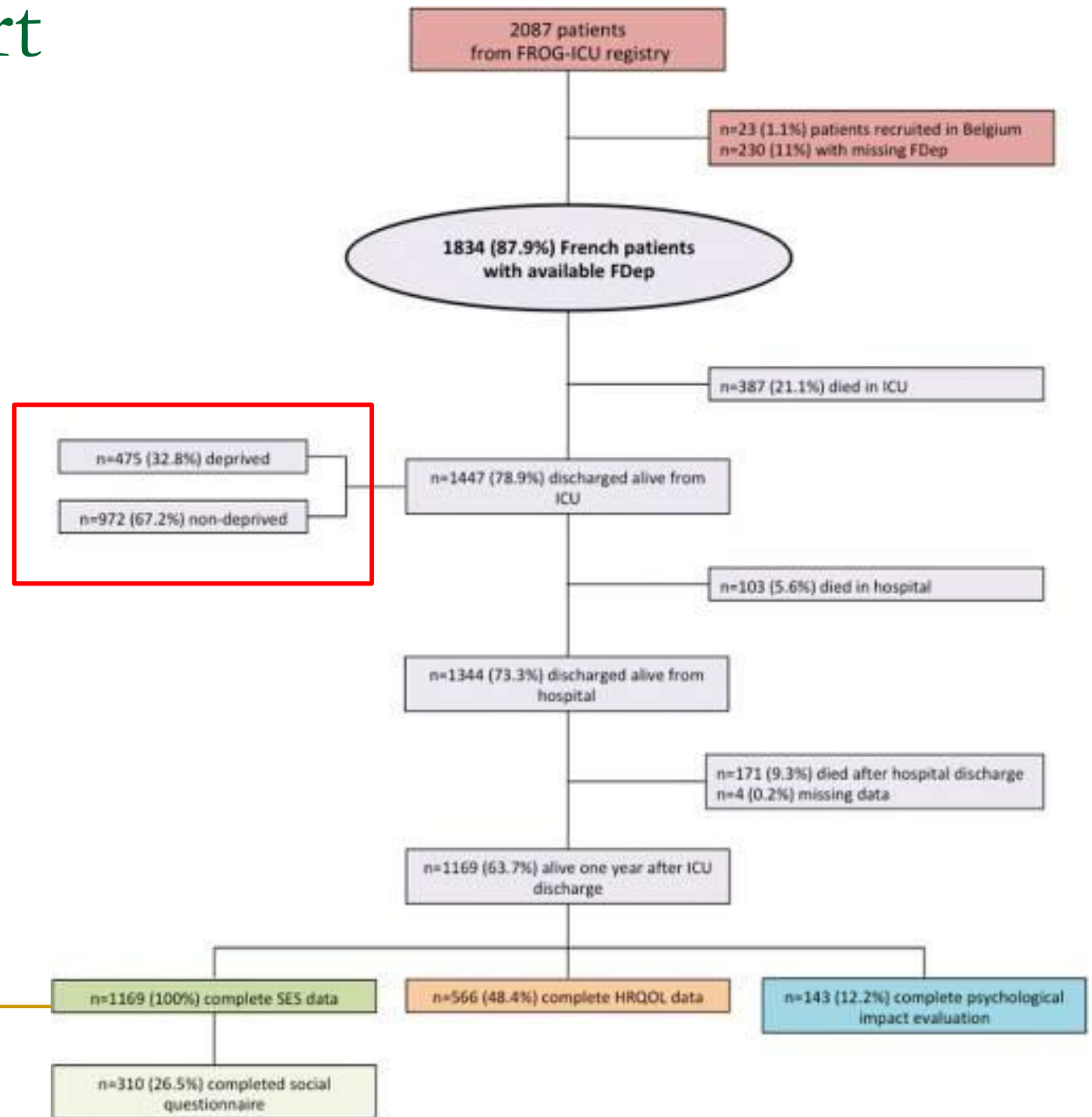Surcoûts liés à l'augmentation de la durée de séjour

Remerciements

- Naike Bigé, PH, MIR, hôpital Saint-Antoine
- Jean-Luc Baudel, MIR, hôpital Saint-Antoine
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- DIM, hôpital Saint-Antoine

Association of social deprivation with 1-year outcome of ICU survivors: results from the FROG-ICU study

Bastian K et al.

Flow chart

2087 patients
from FROG-ICU registry

n=23 (1.1%) patients recruited in Belgium
n=230 (11%) with missing FDep

1834 (87.9%) French patients
with available FDep

n=387 (21.1%) died in ICU

n=475 (32.8%) deprived

n=972 (67.2%) non-deprived

n=1447 (78.9%) discharged alive from ICU

n=103 (5.6%) died in hospital

n=1344 (73.3%) discharged alive from hospital

n=171 (9.3%) died after hospital discharge
n=4 (0.2%) missing data

n=1169 (63.7%) alive one year after ICU discharge

n=1169 (100%) complete SES data

n=566 (48.4%) complete HRQOL data

n=143 (12.2%) complete psychological impact evaluation

n=310 (26.5%) completed social questionnaire

Précarité sociale
French Deprivation Index (Fdep)

- **Score multidimensionnel à 4 items:**
  - Revenu médian par famille
  - % d'habitants avec 2 ans post bac
  - % chômage,
  - % ouvriers
- **Classification en 5 quintiles**
  - Par rapport à la population française
  - Au sein de la cohorte FROG ,
- **Classification en 2 catégories**
  - Précaire si score FDep > 0
  - Non précaire si score Fdep = 0 ou < 0

Outcomes in ICU survivors according to French Deprivation Index (FDep) quintiles of the general French population

Outcome	Q1 (*n* = 791)	Q2 (*n* = 230)	Q3 (*n* = 91)	Q4 (*n* = 152)	Q5 (*n* = 183)	*p* value
1-year mortality	147 (18.6%)	44 (19.1%)	15 (16.5%)	32 (21.2%)	36 (19.8%)	0.911
MCS at 12 months	58.5	65.7	62.2	55.9	49.2	0.27
PCS at 12 months	55.6	51.2	45.6	48.8	45	0.108

MCS mental health component score, *PCS* physical health component score, *FDep* French Deprivation Index,
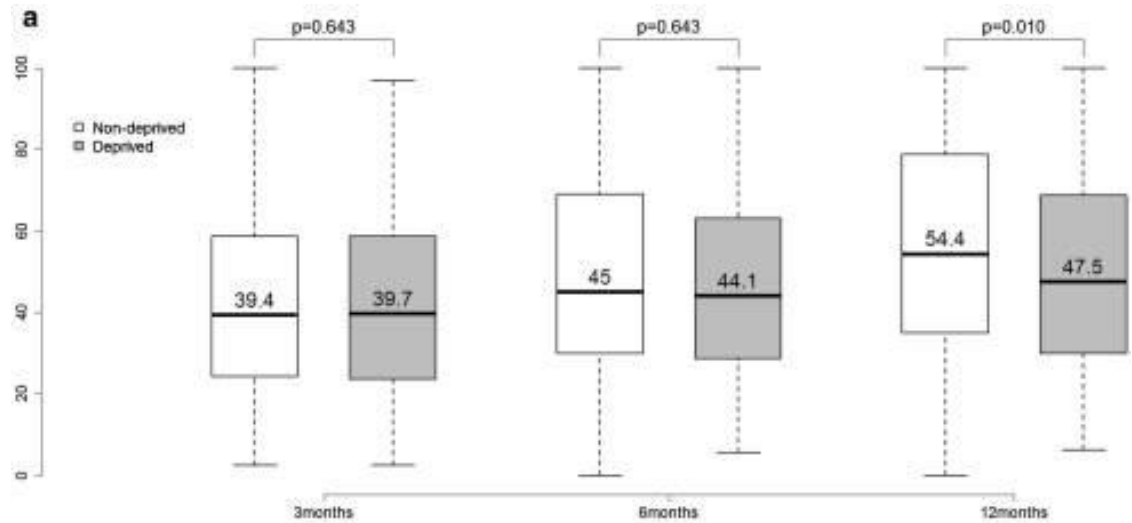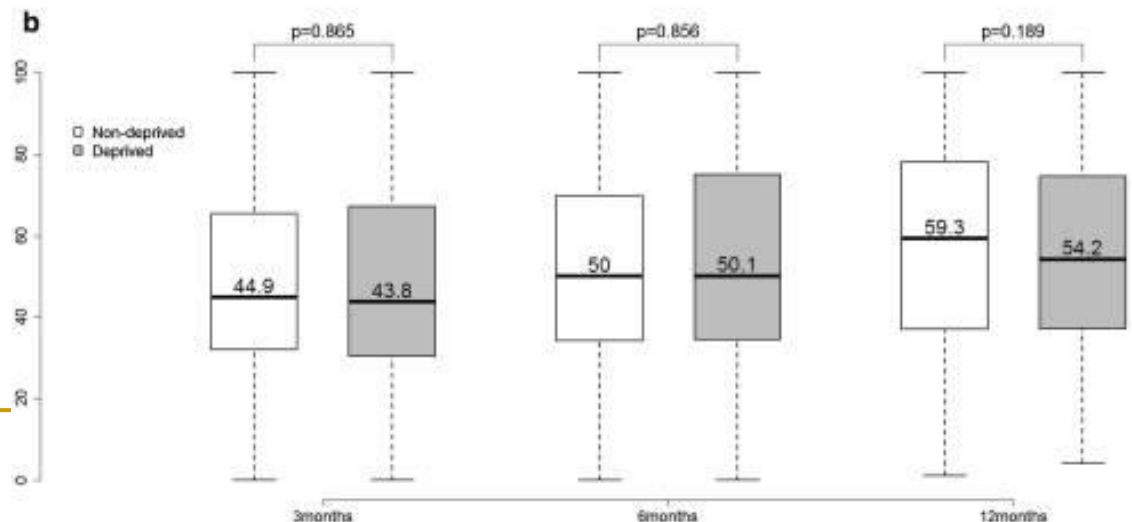
Survival curves
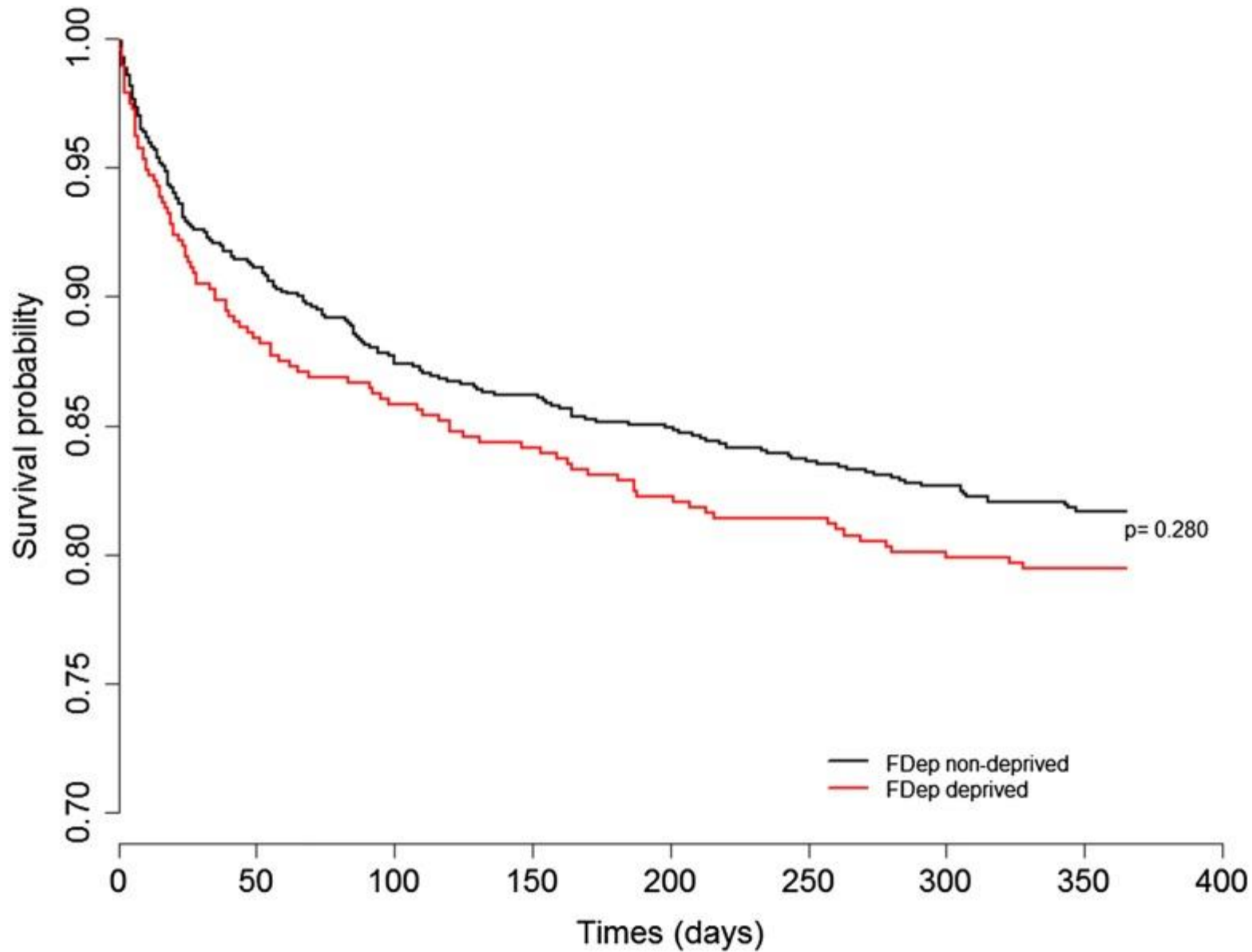
SF-36
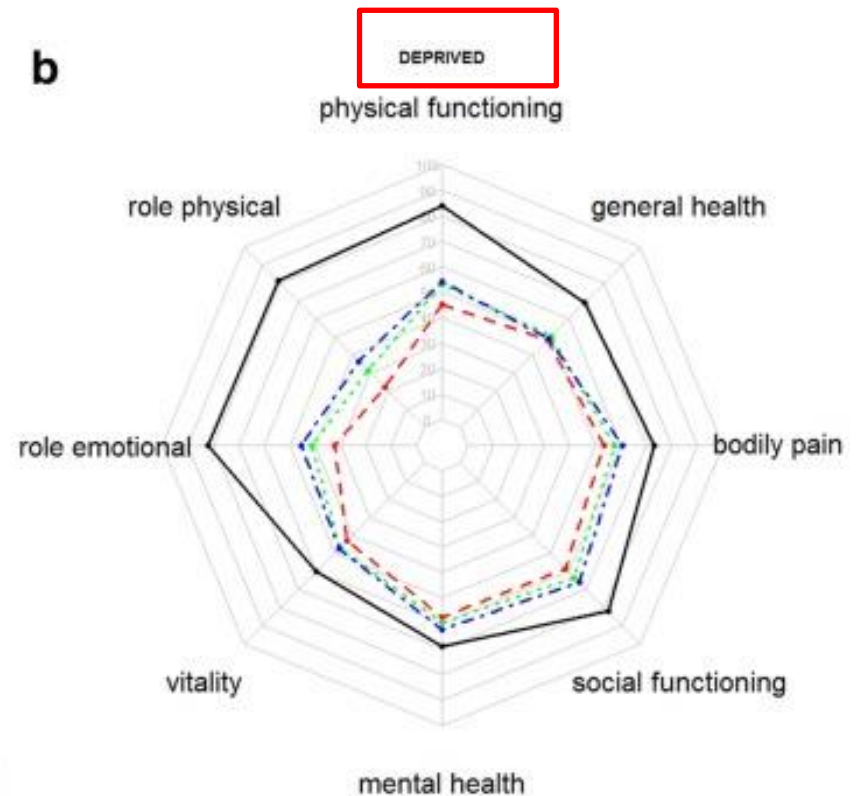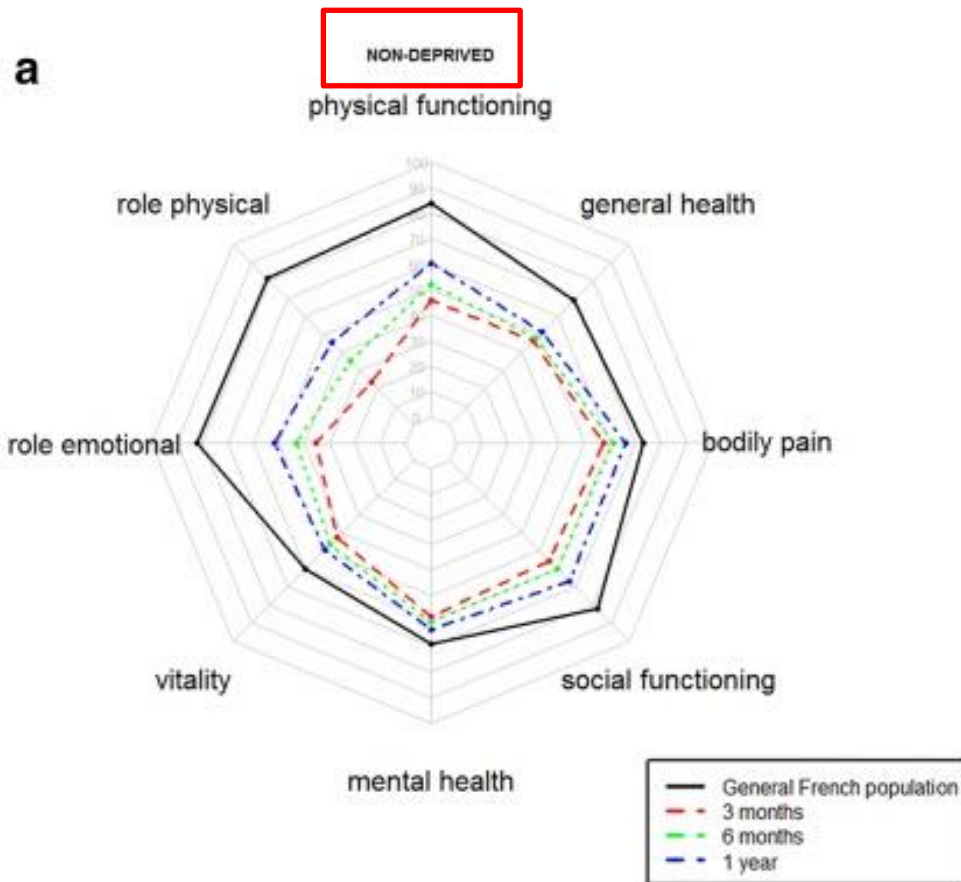
Box plots of evolution of SF-36 over time categorized by FDep.

physical component scale

mental component scale

Impacts du niveau d'éducation

	Total population, n = 289	Low educational level[a], n = 64	Intermediate educational level[b], n = 114	High educational level[c], n = 111	p value
FDep ≤ 0, nondeprived, no. (%)	214 (74.0%)	47 (73.4%)	73 (64%)	94 (84.7%)	
MCS 12 months*	59.7	51.4	58	65.8	0.087
PCS 12 months*	55	47.8	54.4	66.9	0.035
ICU LOS	12	13	11.5	11	0.567
Hospital LOS	28.5	27	24	22	0.068
Low annual income, no. (%)	78 (27.0%)	27 (56.2%)	32 (36%)	19 (20.2%)	< 0.001
Intermediate income, no. (%)	121 (41.9%)	19 (39.6%)	53 (59.6%)	49 (52.1%)	< 0.001
High annual income, no. (%)	32 (11.1%)	2 (4.2%)	4 (4.5%)	26 (27.7%)	< 0.001

Résumé de cette étude

- **Définition de la précarité**
  - Dossier social
  - En fonction du lieu d'habitation
  - En fonction de la formation initiale ou des revenus
  - Ex études excluant les non assurées sociaux
- **Impact à court terme**
  - Mortalité
  - Durée de séjour
- **Impact à long-terme**
  - Déterminants?
- **Comparaisons internationales?**

Socioeconomic Position and Health Outcomes Following Critical Illness: A Systematic Review

Jones, Jennifer R. A. DPT[1,2]; Berney, Sue PhD[1,2]; Connolly, Bronwen PhD[1,3,4,5]; Waterland, Jamie L. BPT(Hons)[1]; Denehy, Linda PhD[6,7]; Griffith, David M. MD[8]; Puthucheary, Zudin A. PhD[9,10]

Author Information⊙

References	Deprivation/SES: Measure	Relevant Outcome(s)	Results[a]
Gayat et al (42)	Deprivation: French Deprivation Index	Survival	No difference in deprivation score between survivors and nonsurvivors 1 yr post ICU discharge.
Griffith et al (12)	Deprivation: Scottish Index of Multiple Deprivation	Health-related quality of life	Lower deprivation was associated with higher Short Form-12 Mental Component Summary Scores at 6 mo (multivariate regression model includes ICU discharge physical function and nutritional status, $\beta = 1.39$ [0.04–2.75]; $p = 0.044$) but not 12 mo. No association between deprivation and Short Form-12 Physical Component Score at 6 or 12 mo.
Gabriel et al (40)	SES: Index of Relative Socioeconomic Advantage and Disadvantage	Survival	SES was independently associated with in-hospital mortality in the multivariable analyses according to 1) individual insurance categories and 2) patients classified as public or compensable.
Schnegelsberg et al (43)	SES: education, income	Survival	Patients with lower income had almost double the 30-d mortality rate than higher income after adjustments for sex, comorbidity, and Simplified Acute Physiology Score II (46/129; 35.7% vs 30/129; 23.3% adjusted HR 1.99 [1.24–3.21]). No significant differences for 180-d mortality according to income or education or 30-d mortality according to education.
McPeake et al (47)	Deprivation: Scottish Index of Multiple Deprivation	Survival	After adjustment for deprivation and age, alcohol dependence was associated with an almost two-fold increase in odds of mortality at 6 mo.
Fletcher et al (46)	Deprivation: Index of Multiple Deprivation	Survival	Increasing deprivation significantly associated with ICU mortality (HR 1.004 per point of IMD score [1.001–1.006] $p = 0.003$).
Shippee et al (45)	SES: education, income	Survival	When the relationship between race and post-ICU mortality was examined, lower income and education level were significant predictors. However, when comorbidities (CCI) were added to the model, education and income were no longer significant predictors of post-ICU mortality.

Welch et al (48)	Deprivation: Index of Multiple Deprivation	Survival	Significant increase in hospital mortality as deprivation increased which persisted after adjustment for age, sex, acute severity, medical history, source and reason for admission to critical care, and unit-level IMD quintile (least deprived vs most deprived adjusted OR 1.19 [1.10–1.28]; $p < 0.001$). Increasing deprivation was significantly associated with increasing hospital mortality when stratified by type of admission (nonsurgical, elective surgical, and emergency surgical). Significant associations between hospital mortality and increasing deprivation according to education, employment, health and disability and living environment domains of the IMD.
Ho et al (41)	SES: Index of Relative Socioeconomic Disadvantage	Survival	Significantly higher long-term mortality in the lowest SES group which persisted after adjustment for age, ethnicity, comorbidities, acute illness severity, and geographical accessibility to essential services (adjusted HR 1.21 [1.04–1.41]; $p = 0.014$). Socioeconomic status was not significantly associated with in-hospital mortality.
Norena et al (44)	SES: education, employment, income	Survival	Two multivariable linear regression models were constructed to explore the association between patient descriptors and hospital mortality. Both models included age, sex, % postsecondary education, % unemployment rate, and median income and source of admission. Model 1 additionally adjusted for APACHE II score, whereas model 2 additionally adjusted for CCI, from which it was determined that APACHE II and CCI scores were significantly associated with hospital mortality. In both models, % postsecondary education (adjusted OR model 1: 1.018 [1.004–1.033], $p = 0.013$; model 2: 1.014 [1.002–1.026]; $p = 0.03$), but not median income or % unemployment, was independently associated with hospital mortality.

ORIGINAL

Influence of socio-economic status on functional recovery after ARDS caused by SARS-CoV-2: the multicentre, observational RECOVIDS study

- 30 services de réanimation français
- Comparaison de patients avec ou sans précarité sociale : EPICES
  - Conditions sociales
  - Activités de loisir
  - Support familial
- Evaluation aussi par IRIS
- Suivi à 6 mois
  - EFR, Scanner thoracique, Epreuve de marche de 6 min

	Complete case analysis[a]				Multilevel analysis[b]		Imputed data sets[c]
	OR [95% CI]	*p* value	Adjusted[d] OR [95% CI]	*p* value	Adjusted[d] OR [95% CI]	*p* value	Adjusted[d] OR [95% CI]
EPICES		0.49		0.95		0.99	
Deprived	1.19 [0.72; 1.97]		1.02 [0.57; 1.83]		1.00 [0.54; 1.87]		1.08 [0.62; 1.87]
Non-deprived	Reference		Reference		Reference		Reference

Association Between Socioeconomic Status and Outcomes in Critical Care: A Systematic Review and Meta-Analysis

McHenry, Ryan D. MBChB[1]; Moultrie, Christopher E. J. MD[1]; Quasim, Tara MD[2]; Mackay, Daniel F. PhD[3]; Pell, Jill P. MD[3]

Author Information⊙

Mortalité

Source	Effect Size as OR [95% CI]
Latour 1991	1.61 [1.07; 2.42]
Findlay 2000	1.30 [0.92; 1.84]
Hutchings 2004	1.10 [1.01; 1.19]
Norena 2006*	0.85 [0.75; 0.97]
Ho 2008	1.16 [0.85; 1.59]
Welch 2010	1.19 [1.10; 1.28]
Zager 2011	1.20 [0.90; 1.60]
Docking 2014	1.32 [0.55; 3.18]
Fletcher 2014	1.18 [1.07; 1.30]
Puxty 2015	2.67 [1.52; 4.69]
Bige 2015	1.07 [0.77; 1.49]
Schnegelsberg 2016*	1.49 [0.84; 2.65]
Gabriel 2016	1.19 [0.99; 1.44]
Liisanantti 2017	0.72 [0.44; 1.20]
Bastian 2018	1.07 [0.86; 1.33]
Benais 2018*	1.15 [0.45; 2.92]
Oh 2018*	1.14 [0.87; 1.48]
Quenot 2020	1.11 [0.84; 1.47]
Oh 2020	1.02 [0.95; 1.10]
Mullany 2021	0.94 [0.82; 1.08]
Lone 2021	1.78 [1.01; 3.14]
Ferrando-Vivas 2021	1.14 [1.01; 1.28]
Barwise 2021	1.23 [0.96; 1.58]
Total	**1.13 [1.05; 1.22]**
Prediction interval	[0.85; 1.50]
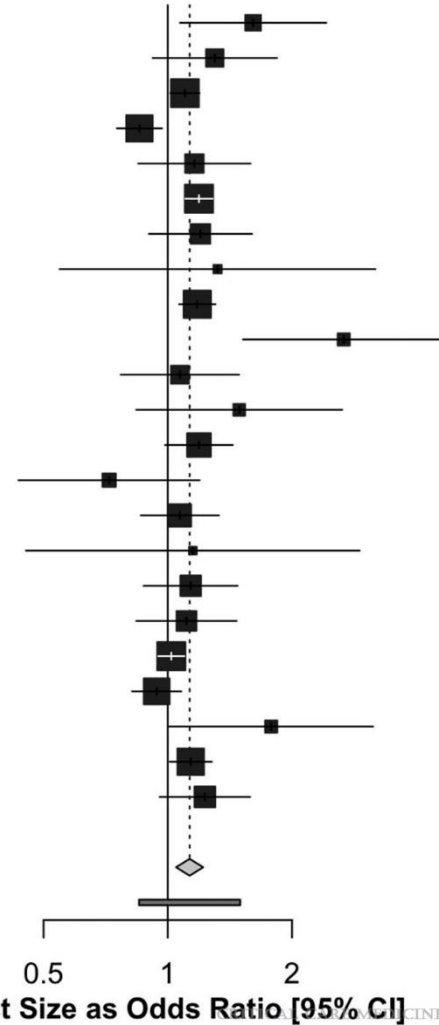
Heterogeneity: $\chi^2_{22} = 53.43$ ($P < .001$), $I^2 = 59\%$ [35%; 74%]

Effect Size as Odds Ratio [95% CI]

Durée de séjour en réanimation

Source — **Difference of Median ICU Length of Stay in Days [95% CI]**

Findlay 2000   0.00 [-0.59; 0.59]
Welch 2010   0.00 [-0.08; 0.08]
Schnegelsberg 2015 -0.10 [-1.47; 1.27]
Liisanantti 2017   -0.20 [-0.64; 0.24]
Benais 2018   0.00 [-1.19; 1.19]
Quenot 2020   -1.00 [-1.79; -0.21]
Lone 2020   -2.20 [-5.19; 0.79]
Mullany 2021   -0.10 [-0.13; -0.07]

Total   **-0.11 [-0.29; 0.06]**
Prediction interval   [-0.53; 0.30]

Heterogeneity: $\chi^2_7 = 12.77$ ($P = .08$), $I^2 = 45\%$ [0%; 76%]

Difference of Median ICU Length of Stay in Days [95% CI]

-4   -2   0   2   4
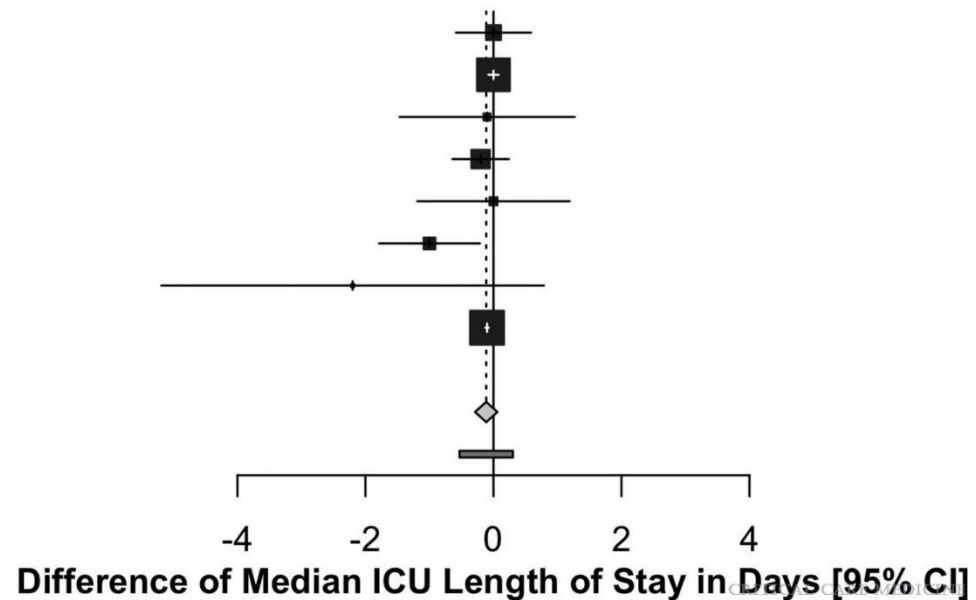
Conclusion

- Pas de perte de chance en France du fait du statut social

- Modification des caractéristiques des séjours chez les patients précaires

- Impact sur le financement des hôpitaux?