Presentation of the funded projects in 2009 for the «Public Heath » Program

ACRONYM and project title **Page**

Program « Public Heath »

DELOS Development of area based indices for monitoring and analysing social and territorial health inequalities in France

Abstract

To facilitate the monitoring of social inequalities for health planning, it is necessary to develop an area-based deprivation index in France. While these indices are frequently used in UK studies, there's no evidence of their adaptation in neighbourhoods analysis in France.
The aim of this project is to analyse the methodological aspects of the construction of such index. Several project, interesting in neighbourhoods approach, collaborate in order to identify the capacity, the condition for the elaboration of deprivation index in France.

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Reference

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Cluster label

Equit'Area Socio-spatial aggregation of exposure to health impacting environmental nuisances – A pilot study in four urban areas Socio-spatial aggregation of exposure to health impacting environmental nuisances – A pilot study in four urban areas

Abstract

Today, evidence of social inequalities in health is well established. As a general rule, socioeconomically disadvantaged populations are more strongly affected by various health problems. Assessing how environmental exposures may partly explain social inequalities in health is a major public health research issue. This issue featured in the conclusions of the roundtable discussions on the environment (« Grenelle de l'environnement ») and comprises a major component of the second environmental health plan (PNSE 2).

The research program is structured around three successive, complementary, stages:

The first one will consist in describing the socio-economic and territorial inequalities in a set of environmental pollution exposures. The goal of this stage is to verify whether or not socio-economically disadvantaged populations are subject to an exposure differential to one or cumulative environmental nuisances and whether they have to put up with a disproportionate burden of environmental hazards.The second stage will consist in describing the social inequalities vis-à-vis the spatial distribution of stillbirths and neonatal mortality between 2000 and 2005. The objective of this stage is to examine whether the risk of stillbirth or of early or late neonatal mortality is higher amongst socio-economically deprived populations than in more affluent populations. Finally, the third stage will consist in examining whether the relationship between the rate of stillbirth or early infant mortality, and a set of combined and spatially distributed environmental exposures is socially differentiated. The results of this stage, combined with those of the first two stages, should further our understanding of the mechanisms by which environmental nuisances contribute to social inequalities in health.An ecological multicity study design will be used. The geographical unit used is the French census residential block, (IRIS: Ilôts Regroupés pour l'Information Statistique). The well-documented existence in France of a North-South variation in the occurrence of health outcomes, in the distribution of socio-economic and demographic characteristics and in environmental exposures led us to focus on the following 4 large urban metropolitan areas: Lille, Paris, Lyon and Marseille. A deprivation index previously developed will describe the socioeconomic level of the geographical unit. In order to investigate the complex question of how environmental exposures contribute to social inequalities in health, we have selected environmental nuisances for which

data were available, for which the relevant literature documented their link with one or more relevant health outcomes, and for which the existence of socio-economic gradients was already known, at least in the few countries in which they have been studied: urban air pollution, proximity of pollutants emitting industrial installations and proximity of Seveso classified industrial installations and noise nuisances. The rate of stillbirth and early and/or late neonatal mortality were included as health outcomes because recent literature has highlighted the existence of a link between certain environmental exposures (more particularly air pollution) and infant mortality and its components. The analysis scheme aims to investigate the 3 components of this project that were previously presented A particular attention will be paid to the presence of the spatial autocorrelation effect and the rarity of the health event. To assess whether cumulative exposures, rather than single nuisances, might be relevant, several methodological approaches will also be developed. Amongst these we plan to introduce interaction terms between several nuisances in the multivariate models or to build a composite index of cumulative exposure through multidimensional analysis (following the approach developed for the deprivation index, in particular hierarchical classification) from all the nuisances affecting each IRIS.

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Reference	ANR-10-PRSP-002
Cluster label	

IAGO Genes x Occupational exposures Interactions in Asthma

Abstract

Occupational asthma is a public health problem. It represents the first occupational respiratory disease nowadays in developped countries and concerns around 15% of adult asthma. It is an excellent model to understand the occurrence or the reactivation of asthma in adulthood. Progress in genetic research in asthma has open new avenues to understand the interactions of genetic determinants and occupational exposures. Large scale genotyping, performed in the context of genome wide association studies (GWAS) now allow to explore numerous gene environment interactions. Today, no single gene environment interaction in the field of occupational asthma can be considered established according to current standards. Major drawbacks till now to identify gene environment interactions in asthma are addressed in the proposed project: availability of information on the whole genome, precise assessment of occupational exposures and access to large studies for replication.

The IAGO project will address the interactions of occupational exposures and genetic polymorphisms in asthma and related phenotypes, a particular aspect of gene environment interactions. Studies concerned are the French Epidemiological study on the Genetics and Environment of Asthma (EGEA), with strong collaborations with the European Respiratory Community Health Survey (ECRHS) and Industrial studies from Denmark and the Netherlands. These cohorts are precisely phenotyped for asthma and allergy, with available genotypes (including large scale genome-wide genotyping).

The strategy regarding genetic aspects will be based on two complementary approaches : hypothesis driven (candidate interactions) and hypothesis generating (pangenomic approach). Three specific candidate interactions have been chosen to be studied based on the strength of a priori hypotheses and the potential of in depth biological, and of functional studies regarding these interactions based on data available, data to be collected and collaborations with partners. Up-to-date characterization of occupational exposures for population-based studies is available as well as collaborations with studies with specific exposures finely characterized.

From the design point of view, it will take advantage of clinically–based case-control study (substantial proportion of severe asthma), family study (genetic models), general population cohorts (representativeness) and specific industrial cohorts (homogeneous and precise occupational characterization).

The project is based on collaborations between partners from France, Spain and the Netherlands, with specific expertise in occupational and genetic epidemiology who have long lasting

	collaborations assessed by common publications, in particular in the recent period.
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Cluster label	

INDEX The independence of experts and related problems in the field of public health: expertise in practice and communication issues

Abstract

The problem of scientific expertise has been gaining more and more prominence in the debates on public health-related risks. Progressively, emphasis has been laid on the principles framing expertise (independence of the experts, tracking down conflicts of interests, accountability of procedures, etc.). As a result, there is a growing lack of knowledge on the effective practices of expertise, which makes it difficult to develop an appropriate communication with decision-makers, experts and citizens.

This research aims at responding to this difficulty with a focus on what determines expertise work on the field. We propose:

- Specifying the effects produced by various "worlds" that inform expertise processes: mainly, the scientific world to which the experts belong ; the political and administrative world of those who order expert reports; the world of socio-economic actors who are risk "producers"; the world of civil society, where expertise is an immediate concern.
- Determining what effects are produced by these "worlds" that inform expertise processes in diverse manners, in light of the composition and functioning of the different structures where they develop and in relation to the inherent dynamic of these processes.
- Characterizing expertise processes, depending on whether they develop in "confined spaces" or in broader public spaces, which may attract extensive media attention.

Our central hypothesis is that, on the one hand, the product of expert work is the often-complex result of this set of determinants; on the other hand, that it results from various types of "compromises" made by the actors involved in these processes (knowing that the reference to principles of independence, openness, etc. is generally related to the presence of public attention or controversy on expert work).

This research will rely on three case studies on the expertise of health risks in the field of occupational health, nanotechnology, and influenza pandemics. Each of these cases will be studied by one of the three participating research teams from three major academic institutes in the fields of humanities and social science (UMR PRISME, CSO and PACTE). A 24-month workshop will help foster scientific exchanges with a broader circle of researchers interested in the issue of expertise and other actors (scientists, political or administrative actors, civil society representatives) who are directly involved.

In addition to academic papers, this research is meant to bring useful elements to the table to open a new debate on expertise, in order to better combine the principles of "good governance" and the effective constraints observed in various field studies. One key question is the following: is it possible, and if so, how, to shift from the issue of the independence of experts to the management of their various "dependences".

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Cluster label	

Abstract

The methodological framework of this project consists of evaluation of an innovative analysis plan, the case series, on linked medico-administrative files, hospital databases (PMSI) and national health insurance reimbursement data. The field of investigation in the present project concerns the study of adverse effects of vaccines, in particular paediatric vaccines.

Classically, pharmacoepidemiology studies are case-control studies, as the rarity of adverse events makes the follow-up of cohorts unsuitable, although such an approach would be desirable in the context of causality assessment. Cases are extracted from hospital databases and are matched to appropriate controls. However, access to the required information might be in practice quite complex, which may result in possible biases. The so-called "case series" method provides an alternative to study the association between transient exposure and a possibly recurrent adverse event (Farrington, 1995). It only uses cases without using controls, as the cases act as their own controls. Used increasingly frequently, the case series method was developed in order to study adverse events of vaccines.

In France, events requiring hospitalisation could also be identified from the Programme de Médicalisation des Systèmes d'Information (PMSI) [Medicalization of Information Systems Programme], designed to measure hospital activity and its cost. In order to conduct a case series analysis, information on the history of vaccine exposure can then be obtained independently from national health insurance reimbursement files. The Système National d'Information Inter-Régime de l'Assurance Maladie (SNIIRAM) [National Health Insurance Inter-Regime Information System] is the tool developed by the Caisse Nationale de l'Assurance Maladie des Travailleurs Salariés (CNAMTS) [Salaried Workers National Health Insurance Fund] to collect all data derived from health care and health product reimbursements by the various mandatory health insurance regimes. The SNIIRAM potentially constitutes a powerful pharmacoepidemiology tool depending on the relevance and quality of the information contained in this database. In June 2009 we obtained from the Institut des Données de Santé (IDS) the agreement to the extraction of data from the SNIIRAM.

Matching of data to the analysis tool concerns a number of aspects: (i) validity of the case selection derived exclusively from administrative databases, using the coding based on the international classification of diseases ICD10; (ii) validity of reconstitution of vaccine exposure; (iii) validity of risk estimates.

The first associations to be considered will be a documented association between paediatric vaccines (MMR) and febrile convulsions. The validity of the PMSI case selection will be

assessed by checking back the clinical files in the hospitals located in Doubs, Bas-Rhin and Burgundy Region. Potential associations will also be assessed. This feasibility project should elucidate various potential hubs, a prerequisite to an application that could then be systematically integrated into a reactive surveillance protocol. Extensions to sequential analyses for surveillance purposes will also be considered. In all these dimensions, adaptative strategies and/or methodologies to SNIIRAM data features will be elaborated and evaluated.
This project includes 3 partners applying for the ANR grant ant 4 other partners collaborating closely, including one in United Kingdom (UK). This research program is organized with a strong biostatistical research component, notably with the author of the cases series method (UK), and a network of pediatrician and directors of hospital medical informatics departments.

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Reference	ANR-2010-PRSP-005
Cluster label	

MOBIDYQ Dynamical Biostatistical Models for Epidemiology

Abstract

In a context where public health issues are increasingly important, where epidemiologists collect richer data through cohort studies, statistical models play an increasingly important role. In particular, dynamic models are used to model the risk of relevant events and can be used for prognosis. At the same moment, there is an important development of biostatistical models. The multi-state models are used to model the occurrence of several events, models for quantitative longitudinal data are used to model the evolution of biological markers or psychometric scores, joint models are used to model simultaneously both types of data. Two particular public health issues are dementia and hospital-acquired infections. In both cases several events may occur and must be taken into account in the analysis. For example, dementia occurring in elderly should be modelled simultaneously with death, which instantaneous risk may be greater than that of dementia. This is necessary to obtain unbiased estimates because the diagnosis of dementia is made at discrete time. This also allows calculating the expected time spent in dementia. In addition a joint model using psychometric tests can predict the onset of dementia, and thus at risk subjects could be treated early with better chances of success. For hospital-acquired infections, this dynamic aspect of prognosis is also crucial.

Biostatistics teams in Bordeaux (directed by Daniel Commenges) and Leiden (Hein Putter) are specialists in these models. The project consists in continuing to develop some statistical aspects, in increasing the impact of this methodological effort in epidemiological practice, through collaboration with two teams of epidemiology, one devoted to the epidemiology of brain aging (directed by Jean-François Dartigues, Bordeaux), the other to hospital-acquired infections (directed by Jean-François Timsit, Grenoble). The aim is to strengthen the link between sophisticated statistical developments and epidemiology as well as with clinical research. In addition, the project seeks to promote the dissemination of such methods by writing friendly and reliable software. This software, developed in the free language R, will cover a range of multi-state and joint models, with the ability to easily switch from one model to another and compare the quality of estimators obtained by criteria such as Akaike criterion and its derivatives. This development must go hand in hand with writing a book describing the theory with applications and implementation of software.

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Reference	ANR-2010-PRSP-006
Cluster label	

PEPSY Perinatal exposure to environmental and occupational exposures to chemicals and their role on children neurodevelopment: follow-up of 6-year old children of the PELAGIE cohort (Brittany, 2002-2006)

Abstract

The developing brain is particularly sensitive to injury caused by toxic agents compared to adult brain. For some toxicants for neurodevelopment, there are evidences showing that the impact of exposures during pregnancy on neurodevelopment is not limited to observable consequences at birth, but may be more subtle and detected during childhood. These lower performances, sensory deficits, developmental delays and learning disabilities at school are very costly to families and to society.

The current project will evaluate the consequences on 6-year old child neurodevelopment of exposures during pregnancy to neurotoxicants, rarely or never studied in France and Europe, such as organophosphorous insecticides, solvents and brominated flame retardants. It will be based on the mother-child cohort PELAGIE conducted in the Brittany region by our research team between 2002 and 2006. The prenatal exposures to organophosphorous insecticides, solvents and brominated flame retardants have already been assessed from exposure biomarkers, environmental data and questionnaires.

The current project includes a quantitative and qualitative neuropsychological assessment of a total of 477 6-year old children randomly selected from the cohort and, in parallel, an assessment of the familial environment of the child (with the HOME Inventory). Several functions of the child neurodevelopment will be assessed: memory, attention, language and behaviour. The project will assess the exposures to the pollutants of interest during childhood and the exposures during pregnancy or childhood to other recognized neurotoxicants. The exposure to methyl mercury during pregnancy will be thus realized from maternal hair collected at birth. Exposures during childhood to organophosphorous, solvents and brominated flame retardants will be measured, as well as exposure to lead and environmental tobacco smoke, using questionnaire to mother, urinary samples of children (organophosphorous insecticides, cotinine), and dust samples at home (brominated flame retardants, organophosphorous insecticides, lead).

Results of this project will be the association between the neuropsychological test scores and the exposures during pregnancy or childhood to the pollutants of interest. Multivariate statistical analyses will be conducted controlling for other factors that may alter child's development such as maternal alcohol consumption during pregnancy, that have already been collected from questionnaire at the beginning of pregnancy at the inclusion in the cohort, as well as the child's familial

environment and the other confounding factors assessed in this project. Analytical and innovative protocols and their validation for measurement of brominated flame retardants and organophosphorous insecticides in dust will be developed and provided in this project. Therefore, this project will also contribute to identify the potential determinants of dust contamination of children' home by these pollutants. Finally, this project will provide new and important results in France, helping in possible hazard recognition and operational policy identification for Public Health purposes.
This project involves several disciplines including psychology of development and neurodevelopment (team of researchers of the University of Rennes 2), statistics and epidemiology (INSERM team, leader of the project), and expology, metrology and toxicology (EHESP team in Rennes).

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ANR funding	469 676 €
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Reference	ANR-10-PRSP-007
Cluster label	

PLANIPRO Methods for the planning and design of patient-reported outcomes studies

Abstract

Scientific context:
The notion of health has evolved over the past decades and is now not only considered as an "absence of disease or disabilities" but, from WHO's definition since 1948, as "a state of complete physical, mental and social well-being". This definition puts the patient into focus and underlines the multidimensional features that recovers the notion of health through its physical, emotional, and social dimensions. The evaluation of perceived health measures or more generally "Patient Reported Outcomes" (PRO) is increasingly performed in clinical and epidemiological research, especially in chronic conditions. These measures often include Health Related Quality of Life (QoL), depression, pain, drug dependence outcomes...
Despite the widespread use of PRO in clinical studies, the design and planning of studies does not always rely on thorough scientific grounds, regarding some major methodological issues. As a matter of fact, one of the key elements for planning studies in clinical research with good methodological standards, such as the justification of study size, remains hardly ever provided in the framework of self-reported perceived health measures. One of the main issues in study design including PROs arises from the type of endpoint being measured and from its major attribute: the fact that it is an unobserved latent variable and should be managed and analyzed as such with appropriate modelling strategies, particularly when designing a study, as soon as planning phase, for reliable sample size calculations and further analyses.
The objectives of this project are to: i) provide valid sample size methodology for the evaluaton of PRO in cross-sectional and longitudinal studies, ii) adapt sequential and interim designs methodologies in order to provide sample size re-estimation allowing to adjust the initially specified sample size if necessary in PRO studies.
Description of the project:
Two main types of analytic strategies are used for PROs data: so-called classical test theory (CTT), relying on the observed scores coming from patients responses, or models coming from Item Response Theory (IRT), relying on an underlying response model relating the items responses to a latent parameter interpreted as the true individual QoL for instance. Our aim is to provide, using planning issues frequently encounterd in practice, a methodology for sample size calculation for the evaluation of PRO in cross-sectional and longitudinal studies and to compare IRT and CTT-based strategies. The methodological approach will rely on the following complementary skills corresponding to the different teams' expertise: Biostatistics and methodology, Epidemiology, Social and Human Sciences. Several tasks will be achieved:

	Task 1: METHODOLOGICAL ISSUES FOR SAMPLE SIZE CALCULATIONS Task 2: VALIDATION – SIMULATION STUDIES Task 3: CONSTRUCTION OF A SPECIFIC COMPUTER PROGRAM Task 4: APPLICATIONS – ETUDES CLINICAL AND EPIDEMIOLOGICAL STUDIES Expected results: The developments that will be achieved will provide concrete guidelines and reliable sample size formulas that will allow designing clinical studies for the evaluation of PRO in line with good methodological standards. The resulting project will allow avoiding the realization of underpowered studies because of an underestimated sample size or the realization of over costly studies because of an overestimated sample size in the framework of PRO assessments.
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Starting date and duration	January 2011 - 36 months
Reference	ANR-2010-PRSP-008
Cluster label	

PRO-ART Determinants of functional ability and perceived health, and interaction with multimorbidity in hip and knee osteoarthritis

Abstract

Rationale: Hip and knee osteoarthritis (OA) is an important health problem with a high prevalence and significant consequences on functional ability, perceived health, restriction of autonomy and handicap.
In an ageing population, the impact of OA changes and the determinants of its evolution over time need to make public health decisions that would be best informed from representative data. Moreover, the weight of multimorbidities and their interaction on functional ability and perceived health are left unexplored.
This project will rely on the cohort KHOALA, representative, multiregional, of 881 prevalent cases (symptomatic hip and knee OA) offering a research structure relevant to address our research questions.
Objectives
Main objective:
- to describe the evolution over time of pain, functional ability, social participation and quality of life in subjects with hip and knee OA
- to identify prognosis factors of disease evolution (socio-demographic, clinical, and other health parameters)
- to determine interactions with comorbidities, other personal and environmental factors (ICF model).
Concurrent objective: to improve measurement of perceived health specific to hip and knee OA by the OAKHQOL by improving its metrologic performances based on item response theory.
Methods
Task 1: To prepare an improved measurement scale, available as a judgment criteria for the 3rd year of cohort follow up, over the april 2010-march 2012 period.
The OAKHQOL is a self-administered questionnaire recently developed for hip and knee OA quality of life, with 43 items in 5 dimensions. The improvement of this questionnaire will comprise of item selection to best represent the latent trait continuum, and scoring adjustment using Rasch model family, as well as content analysis by consensus and group techniques involving OA subjects and health professionals. This approach will be interdisciplinary and used for content choice in a scientific seminar.
Finally, the psychometric properties of the new instrument will be studied in the cohort KHOALA.
This work will produce an improved measurement scale, available for the project and for the francophone scientific community.
Task 2: Evaluation of the cohort in 2010-2012 (year 3 of follow up) in a repeated measure design to best assess the evolution of

	perceived health and functional ability over time, and to identify stability of deterioration of autonomy. The organisation and coordination will be conducted with the Nancy coordinating centre in close link with the management of the cohort KHOALA by the CIC-EC Inserm CIE6. Proficiencies in psychometry and in statistics for longitudinal data analysis will be provided by the Paris Descartes team, proficiencies in methods and content analysis will be under the responsibility of the Paul Verlaine Metz health psychology team, and analysis and interpretation of determinants of functional ability and quality of life as well as the overall process will be organised by the Nancy team. Perspectives: This project targets to provide public health deciders with information of good quality to help them manage determinants of perceived health in OA subjects, as essential factors to health care resource utilization in their various modalities.
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Starting date and duration	November 2010 - 36 months
Reference	ANR-2010-PRSP-009
Cluster label	

PROCLUS PROpensity scores in CLUSter randomized trials

Abstract

Context: Cluster randomized trials are trials in which intact social units are randomized, rather than individuals. Recently, several authors have shown that such trials may suffer of lack of internal validity, because of the recruitment process. Indeed, in many cluster randomized trials, we first recruit the clusters, then randomize them, and finally recruit the participants. Such a chronology is susceptible to induce selection bias (both quantitative and qualitative) and therefore to question internal validity.
The method of propensity score aimed at reconstructing a situation similar to random assignment with respect to observed prognostic covariates.
Objective: To study the statistical properties of an approach using propensity scores when analyzing a cluster randomized trials, with special interest in the intervention effect bias.
Methods: Monte-Carlo simulation.
Expected result: If such an approach allows reducing bias when estimating intervention effect in cluster randomized trials, recommendations will be drawn regarding the strategy to be applied for statistical analysis.

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88 015 €

Starting date and duration

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Reference

ANR-2010-PRSP-010

Cluster label

TOLIMMUNPAL Environmental, biological and genetic factors involved in the immune tolerance related to malaria : consequences for the protection of pregnant women and young children

Abstract

Malaria is a devastating disease with some 40% of the world's population in 107 countries at risk today. Malaria affects the health and wealth of nations and individuals alike and is responsible of more than 1 million deaths each year, 85% concerning children younger than 5 in Africa.

Among the different species of plasmodia, P. falciparum is the most widespread and the main species responsible for malaria's severe forms, including pregnancy-associated malaria (PAM) and its major complication, placental infection. Primi- and secundigravidae pregnant women are especially vulnerable to placental malaria (PM) and pregnant women are more likely to have P. falciparum infections than non-pregnant women.

Infection with malaria during pregnancy greatly increases the risk of maternal anaemia and newborn low birth weight, the latter of which is an important risk factor for perinatal and infant death. Moreover, children born of a mother with an infected placenta seem to have an increased risk of infection, and it has been conjectured that PM may alter infants' immunological response and be responsible for an immune tolerance phenomenon. This concept of tolerance defines individuals in whom parasite infection induces immune mechanisms such that parasites escape from anti-malaria immunity. These tolerant individuals will have an increased susceptibility to parasitaemia and to clinical malaria upon subsequent infections. We argue here that all malaria infections occurring during pregnancy affect the child's acquisition anti-malaria immunity, not only through placental infection. Therefore, immune tolerance can also concern children born of a Plasmodium-infected mother with an uninfected placenta.

For the first time in malaria domain, we postulate a functional hypothesis involving host genetic polymorphism to explain this phenomenon. This will have important consequences on the protection strategy for both pregnant women and newborns by identifying a population of pregnant women with an increased potential of giving birth to a tolerant child.

Our proposal, an integrated and multi-parametric program, involves epidemiology, biology (immunology and genetics), nutrition, entomology, geography, ecology and statistical modelling, and is complementary to an ongoing program financed by the European Union which aims at contributing to the development of new clinical interventions to control malaria during pregnancy.

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ANR funding	625 637 €
Starting date and duration	November 2010 - 48 months
Reference	ANR-2010-PRSP-012
Cluster label	

VISA Vision, disability, dependance et loss of autonomy in the elderly

Abstract

Over the last decades, a dramatic aging of the population occurred, associated with pathologies, often multiple, evolution which raises the central question of the health status of the elderly population in our country, with the problem of current and future needs in terms of medical and social care. The WHO suggested disability in daily living as indirect indicator of morbidity, particularly useful the estimate the repercussions of aging and related pathologies.

The importance of autonomy is major for a successful aging. The central question for all industrialized countries is how can we prevent or delay disability, slow down and even favour functional recuperation. A better understanding of the mechanisms involved in the disablement process is essential to be able to efficiently intervene and promote successful aging.

Specif epidemiological research on the relationship between disability and visual impairment are scarce and often limited by methodological problems.

Yet, in each tacks of daily living, or almost, visual capacities are required and visual impairment is not compatible with autonomy in the elderly population.

Regarding the impact of visual impairment on the functioning in daily living and the lack of detection, diagnostic and medical care of ocular pathologies, especially in the context of geriatric care, the epidemiological study of the attributable fraction of visual impairment in disability and of the mechanisms involved in the process of loss of autonomy is particularly original, and thus according to a global approach of the elderly population, in taking into account health, socio-demographics, lifestyle, mecido-social care… Diabetes and depression are the two factors particularly explored as potential modulators of the disablement process, being highly correlated to both visual impairment and disability.

The main objective of this project is to study the specific relationship between vision (visual impairment and ocular pathologies) and disability in the elderly, in the Three Cities (3C) epidemiological cohort of functional and cerebral aging which included at baseline (1999) 9 294 elderly subjects in Three cities : Bordeaux, Dijon and Montpellier ; follow-up still on going.

The specific analyses on ocular pathologies will be conducted on the Aliénor study (ancillary project of 3C), which included around 1000 people seen in the hospital for a ophthalmologic exam. Moreover, this project will fund a complete ophthalmologic exam at home for disabled people, to reduce selection bias already observed in Aliénor.

Specific statistical models will be used, such as estimation of the Attributable fraction and Disability Free Life Expectancies.

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