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# Out-of-Pocket Expenses in Households of People Living with Obesity in France

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## Keywords

Obesity · Health expenditures · France · Economics

## Abstract

**Background/Objectives:** Overweight and obesity result in a substantial economic burden in both low- and high-income countries. Moreover, this burden is often underestimated because it only partially accounts for unreimbursed out-of-pocket expenses (OOPE) related to obesity. The objective of our study was not only to evaluate OOPE incurred by people with obesity in relation to their disease with respect to direct medical expenditures and direct non-medical expenditures but also the proportion of people living with obesity who have forgone obesity-related healthcare due to the costs of such care. **Methods:** An observational descriptive survey was conducted among people with class II/III obesity attending six obesity treatment centers in France. Volunteer adult

participants completed a written/phone questionnaire on their related expenditures over the last 6 months for current expenditures and over the last 5 years for occasional ones. The costs were expressed in 2022 EUR. **Results:** 299 people participated (age: 46 years [SD: 13.9], women: 72%, BMI  $\geq 40$  kg/m<sup>2</sup>: 62% and 48% with comorbidities). 65% had a professional activity. 83% declared that they had OOPE related to obesity representing annually EUR 2027/individual on average (5% of the household revenue), including weight loss and nutritional products, vitamins, meal programs, gym memberships, psychologists, but mainly adapted clothing, additional travel costs, and others. 15% of the respondents had to modify their professional activity due to obesity and 15% forwent some medical care in the last 12 months. **Conclusions:** OOPE is a significant part of the economic burden of obesity. Despite some limitations due to the specificities of the participants and because

some costs may be more related to social activities affected by obesity than to healthcare, it seems important to consider these expenditures in cost estimates for obesity.

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## Introduction

Overweight and obesity represent one of the major public health issues associated with increased morbidity and mortality worldwide. Furthermore, it is well recognized that they result in a substantial economic burden in both low- and high-income countries [1–3]. In France, total health expenditure was estimated at EUR 271.9 billion and 11.2% of the Gross National Product in 2019 before the COVID-19 pandemic [4]. The economic burden associated with obesity and overweight was estimated to correspond to 5–8.4% of this health expenditure [5–7]. Despite generous public financing of healthcare expenditures with less than 1% of residents without baseline coverage, French residents remain partly responsible for coinsurance, copayments, and balance bills for physician charges that exceed covered fees. Furthermore, if the medical services basket covered by the National Sickness Fund and other private voluntary health insurance, encompasses a wide range of services, drugs, medical equipment, and devices, it excludes many aspects of care or diseases-related expenses that could result in out-of-pocket expenses (OOPE). The magnitude of these OOPE and, especially, those not covered by any insurance is generally widely underestimated in the official data as they do not consider healthcare services or goods that are not submitted for reimbursement [8].

This topic seems important to document because OOPE is both a consequence of the disease and a barrier to accessing treatment for this disease. Recent evidence indicates that catastrophic household health expenditure from out-of-pocket spending on noncommunicable disease-related medical care was assessed in both high-income and low-/middle-income countries [9]. Moreover, obesity is a disease often associated with low socioeconomic status [10, 11], and these expenses will mainly affect the most economically disadvantaged members of society. The objective of our study was not only to evaluate OOPE incurred by people with obesity in relation to their disease with respect to direct medical expenditures and direct non-medical expenditures but also the proportion of people living with obesity who have forgone obesity-related healthcare due to the costs of such care.

## Materials and Methods

We conducted a cross-sectional survey among people with obesity (class II or III) consecutively treated in outpatient clinics between November 2021 and April 2022 in six reference centers for the treatment of severe obesity, members of the FORCE network (French national clinical research network specialized in the study of patients with obesity and associated pathologies) [12].

Adult (18 years and older) male or female individuals, who have a BMI  $\geq 35$  kg/m<sup>2</sup> with comorbidities or a BMI  $\geq 40$  kg/m<sup>2</sup>, who volunteer to participate in the study and who have sufficient literacy to complete a complex written or telephone questionnaire were included. Exclusion criteria were adults under legal protection, deprived of liberty by a judicial or administrative decision, or having undergone bariatric surgery within 2 years prior to inclusion.

Individual characteristics and a description of the estimated cost of OOPE were measured using a questionnaire to collect data on the use of resource related to obesity only (insisting on the necessary relationship between the OOPE and the obesity as a disease) – over the last 6 months for frequent expenses and over the last 5 years for occasional expenses (one-off purchases of devices, for example) – including necessary aids (professional or not) and possible healthcare forgoing (barrier and refusal) [13]. Regarding this last point, our questionnaire was built to identify both healthcare forgoing related to accessibility issues (unsuitable size of medical equipment, lack of elevator) and those related to the costs involved.

The questionnaire was first tested in a limited sample of people with obesity ( $N = 20$ ) from a clinical center and with the assistance of expert patients to ensure the ability of individuals to respond, to verify the language used, and to pre-select the cost categories after receiving feedback on the questionnaire. The questionnaire was administered on paper, via digital connection, or by phone to offer each patient the method of data collection that best suited him. The sample size ( $n = 300$ ) was estimated considering the size of the adult French population with obesity (8.6 million) and a confidence level of 90% with a 5% margin of error.

All verbatims, as comments and suggestions collected through survey text fields were analyzed by two investigators. In some cases, the answers were reclassified according to the cost classification initially selected. Because expenses were distinguished according to their frequency (monthly expenses and occasional expenses), a cross-check validation was conducted considering the magnitude and type of the reported expense. No imputation method was applied to potentially missing data. All costs were expressed in 2022 EUR.

## Results

Among the 299 respondents of the survey, 43% were enrolled in the two Parisian centers while the rest of the sample was recruited in the four other centers across metropolitan France. Respondents were 46 years old on average (ranging from 19 to 91) and 72% were women (Table 1). 62% of the patients had a BMI  $\geq 40$  kg/m<sup>2</sup> and 38% a BMI between 35 and 40 kg/m<sup>2</sup> with obesity-related

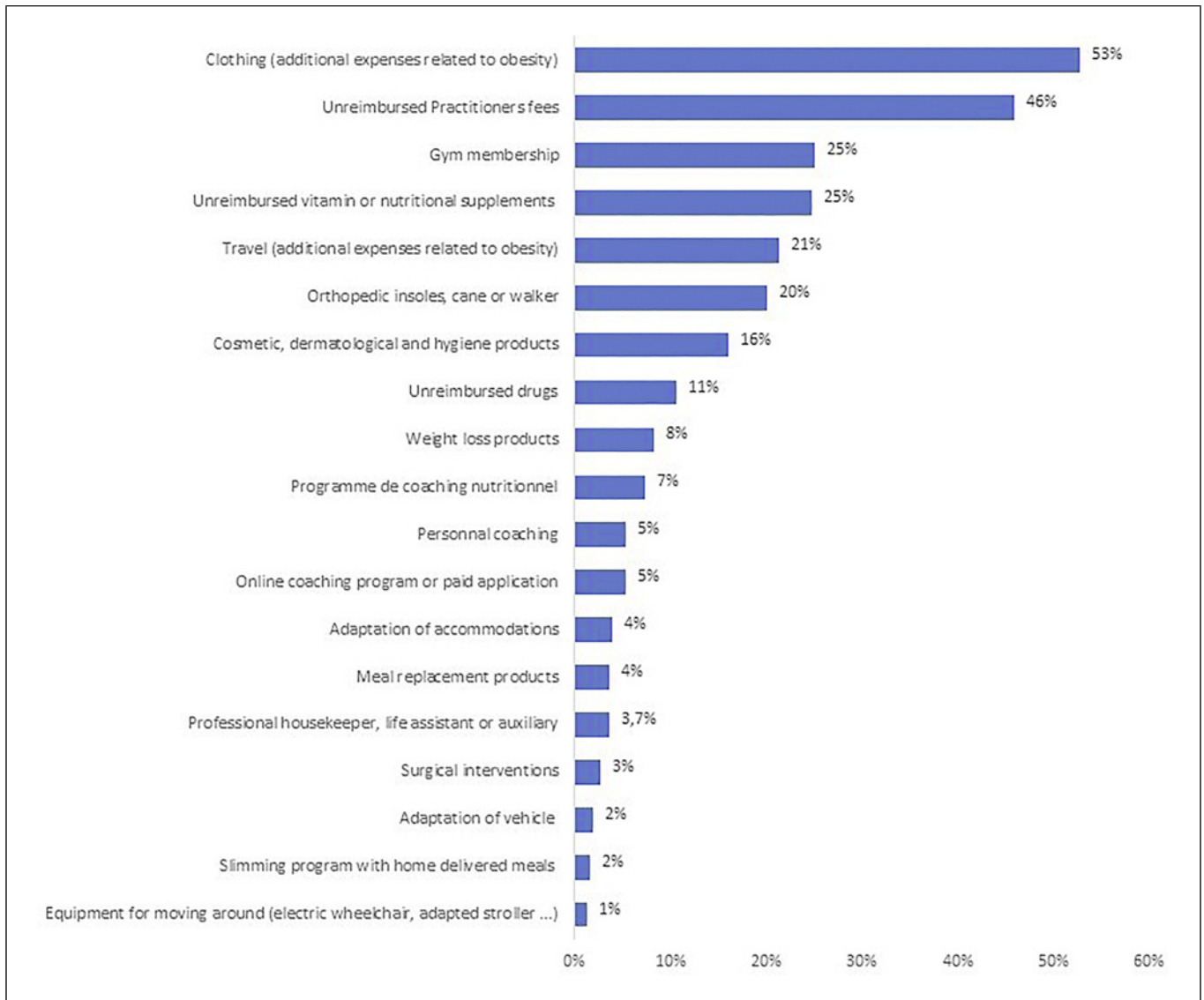
**Table 1.** Characteristics of respondents (*N* = 299)

Characteristics	Value
Age, years	
Mean (SD)	46.0 (13.9)
Median	47
Min–max	19–91
Gender (% female)	71.6
BMI, %	
35–40 kg/m <sup>2</sup>	36.5
40 kg/m <sup>2</sup> and over	58.4
Do not know	5.1
Comorbidities, %	
Yes	75.7
If yes, multiple comorbidities	48.8
No	24.3
Patients with at least one comorbidity, %	
Diseases of the respiratory system	42.5
Diseases of the circulatory system	31.8
Endocrine, nutritional, and metabolic diseases (excluding obesity)	31.8
Diseases of the musculoskeletal system and connective tissue	29.1
Mental, behavioral, and neurodevelopmental disorders	12.0
Diseases of the digestive system	9.2
Diseases of the genitourinary system	5.8
Other diseases	4.8
Neoplasms	2.7
Socioeconomic criteria	
Household size (% of single person household)	24.7
Level of education (% bachelor's degrees and above)	32.1
Employment status (% currently employed or self-employed)	64.5
If yes, % white collar or highly qualified workers	22.8
Household revenue, %	
[EUR 0–EUR 1,800]	27.8
[EUR 1,800–EUR 3,000]	16.7
[EUR 3,000–EUR 4,000]	32.8
[EUR 4,000 and above]	22.7
Health insurance coverage	
Long-term disease status*	50
Complementary private or public health insurance	94.9

SD, standard deviation. \*This status improved reimbursement of main healthcare by the National Sickness Fund.

comorbidities, 18 (6%) respondents were unable to provide their BMI. The age at the beginning of obesity was highly variable with a median of 22 years (min 2 years and max 67 years old). Overall, 76% of the respondents reported having at least one obesity-related disease (43% had respiratory problems, 32% cardiovascular problems, 32% endocrine disorders, 29% osteo-articular problems, and 12% nervous and mental health disorders). Overall, 25% belonged to a single person household, 31% to a household of two people (including spouse, child, and other), and 44% in larger households. 65% were professionally active, mainly as midlevel workers (33%),

white collar and highly qualified workers (23%), and qualified employees (23%). Among unemployed people, 31% were retired, 25% sought employment, and 22% have long-term disability. 32% of the respondents completed their upper tertiary education, 23% had completed their upper secondary education, and 21% their vocational secondary education. Only 207 respondents (69%) agreed to indicate the monthly revenue of their household: among them, the household revenue was EUR 4,523 on average, with a median value of EUR 3,000. Overall, 59% benefited from full coverage of healthcare items reimbursed by the mandatory National Sickness Fund and

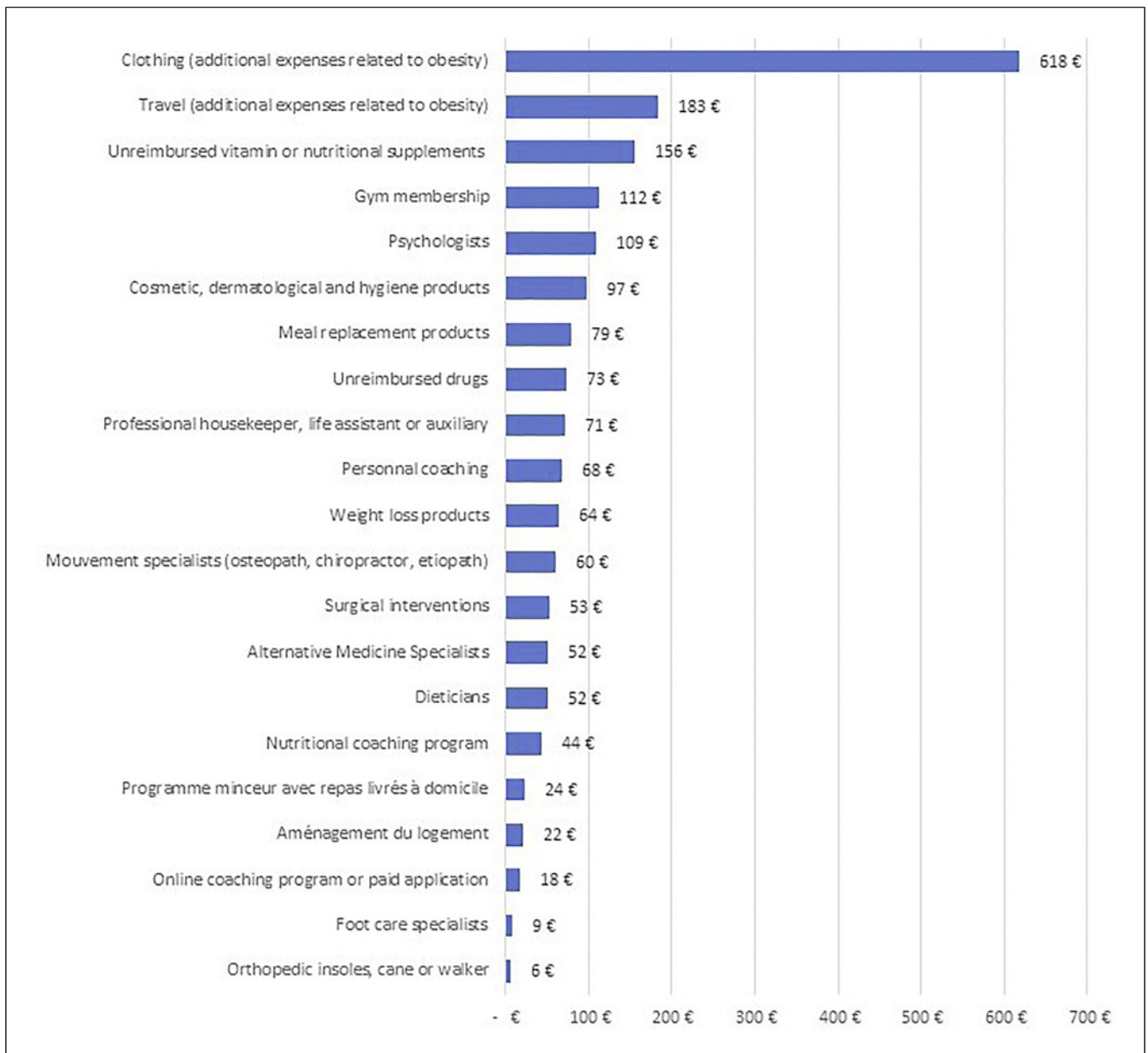


**Fig. 1.** Percentage of patients declaring having OOPE related to obesity by items.

95% had private or public supplementary healthcare insurance.

Overall, 83% of the respondents declared having had obesity-related expenses not reimbursed by the National Sickness Fund or a supplementary health insurance during the last 6 months (monthly expenses) or the last 5 years (occasional expenses) (Fig. 1). Unreimbursed additional expenses related to obesity comprised adapted clothing, unreimbursed healthcare professional (psychologist, dietitian, occupational therapist, psychomotor therapist, acupuncturist, osteopath, sophrologist, etc.), membership in sport center, vitamin and nutritional supplements, additional transportation costs, walking

aids and orthopedic insoles, cosmetology, dermatology or hygiene products, weight loss drugs and products, nutritional coaching, adapted home improvement, unprescribed meal substitute or slimming meal program delivered to home, household help and life support worker, unreimbursed plastic surgery, adapted car improvement. Overall, OOPEs were estimated at EUR 2,027 (median EUR 1,371) per year on average (Fig. 2), representing about 5% of the overall revenue of the related households. In our limited sample, the OOPE did not vary according to the age of the respondents ( $p = 0.8$ ), the gender ( $p = 0.25$ ), the BMI ( $p = 0.1$ ), the income ( $p = 0.9$ ), or the location of the investigating center ( $p = 0.9$ ).



**Fig. 2.** Average yearly OOPE related to obesity in 2022 EUR by items\*. \*Average OOPE for adaptation of vehicle and equipment for moving around (wheelchair, adapted stroller) were EUR <1.

Among the respondents, 3.7% declared that they had benefited from professional help (housekeeper, life assistant, life auxiliary), compared to 29% who reported needing professional or family caregiver (50% spouses) to manage their obesity. In that case, 10% of the main caregivers had to modify their professional activity due to the disease, either by reducing the time of their professional activity, by stopping it tempo-

rarily or permanently. Interestingly, 15% of the respondents reported having to forgo some healthcare (unreimbursed healthcare or for physical access reasons) in the past 12 months due to their obesity and its consequences. However, forgoing was not always linked to cost issues, as expected, but also to problems of accessibility or nonavailability of equipment adapted to people living with obesity.

## Discussion

Financial protection, which is an important health system outcome, can be assessed by examining OOP spending on health services [14]. In France in 2021, current health expenditures (international definition) amounted to 12.3% of gross domestic product, similar to other European countries like Germany or the UK but nearly five points below the USA [15]. Considering only the consumption of care and medical goods after deducting prevention, health management expenditures, long-term care for the elderly or disabled as nursing home services, about 80% of the French health consumption are financed by the statutory health insurance which covers the whole population, and 12.9% by voluntary insurance schemes which also cover a large part of the population. Consequently, OOPE in the general population are sometimes estimated around 7% of this accounting aggregate. However, in France, this calculation is based on the reimbursable healthcare expenses submitted for reimbursement by the compulsory health insurance and not on the overall healthcare expenses supported by the collectivity. According to the World Health Organization, health expenditures should include all expenditures for the provision of health services, family planning activities, nutrition activities, and emergency aid designated for health (excluding provision of water, sanitation). Consequently, this definition, like others, refers primarily to what is spent collectively or individually to improve a health condition and not to the overall economic consequences of a disease. The guidelines on economic evaluations of new health interventions also focus on resources that are “under the control of the health financing system” [16] or directly involved in the production of health interventions [17], if they usually consider the relevance of performing a supplemental analysis including indirect costs. Indirect costs relate to resources not used in patient care but that have been rendered unavailable due to the patient’s poor health state. Such indirect costs include losses of productivity due to a total stoppage (absenteeism) or partial reduction of the productive activity of the analyzed population, whether this activity is paid or unpaid, but also some other health-associated costs estimated in a societal perspective and, therefore, for all possible stakeholders including patients.

Our observational survey was designed to estimate the OOPE supported in real life by people living with obesity using their own definition of the cost consequences of their disease. Interestingly, they have selected some items of costs resulting from their obesity which are often

excluded when considering the costs of a disease. If some of them remain in the field of care (i.e., unreimbursed dieticians, psychologists, foot care specialists, drugs, or mobility devices), questioning the scope of healthcare reimbursement in France, others are likely to be related to social activities partially modified by the disease (i.e., clothing, travel additional expenses) or to the personal environment of people living with obesity (i.e., adaptation of accommodation or vehicle). Additionally, some of the expenses described as related to obesity, such as sports activity costs, could fall under general recommendations for the entire population and are therefore not specific to this disease.

The responses also suggest that they are invested in finding solutions to their health problems using multiple approaches to improve their diet and physical activity, resulting in significant OOPE. An abundant scientific literature has explored the forgoing of healthcare and a clear relationship was established with low-income households and unemployment [18]. Therefore, the high perceived OOPE in relation to household income could result in forgoing necessary healthcare [19]. In our survey, this phenomenon seems to be limited to 15% of the sample; it is more often the consequence of an inadequacy of the care structures to the specificities of people living with obesity (reception areas, unsuitable size of equipment) than to corresponding healthcare OOPE. Furthermore, it is not known whether weight status is an independent risk factor for reduced access and increased potential morbidity [20].

Importantly, the average amounts reported here should be considered with caution because they were estimated in a population that is probably not representative of the entire spectrum of people living with obesity in France. Respondents in our study were anchored in a specific hospital care pathway (consultations in specialized referral centers), which may reduce some OOPE as these centers offer some visits to dietitians and psychologists at no additional cost to people living with obesity. This may also explain the higher proportion of class III obesity than observed in the overall population of French people living with obesity as described in the OBEPI survey [21, 22]. Study respondents were also rather younger, more often women, and with a higher sociocultural level than observed in this representative sample. Finally, our data were affected by the usual biases of declarative studies with retrospective data collection.

More research would be needed including a larger, more representative sample and probably a control group of people without obesity to estimate more accurately the out-of-pocket costs of obesity. However, the OOPE



attributed to obesity estimated here represents approximately double the additional cost of reimbursed healthcare expenses attributable to obesity based on the results of the French Ministry of Economics and Finance [6] after adjusting for the price index of health services.

The economic consequences of obesity go far beyond the simple inclusion of traceable expenses in healthcare reimbursement databases. Our results suggest the need to adopt a comprehensive OOPE approach when estimating the economic impact of obesity, not limiting these OOPE to healthcare provision but also including indirect consequences that strongly affect people living with obesity in their daily life.

### Statement of Ethics

This study was carried out in accordance with the Regulation (EU) 2016/679 of the European Parliament and the Council of April 27, 2016, and in accordance with the World Medical Association Declaration of Helsinki. It was approved by the French Ethics and Scientific Committee for Health Research, Studies, and Evaluations (“CESREES”) on September 16, 2021 (N° 5162901). A full detailed signed informed consent form was signed by all participants before starting the survey. This form provided all relevant information about the research and the role of respondents within it. This form was also included in the online version of the questionnaire and had to be validated to access to the questionnaire. The content of this form was validated by the National Commission for Data Protection and Liberties (CNIL-France) under the number DR-2021-291 on October 20, 2021.

### Conflict of Interest Statement

C. Fabron and B. Detournay are employed by Cemka, a consulting team specializing in health economics, epidemiology, and outcome research. B. Detournay also received personal

compensation for board participation and speaking fees from MSD, Novo Nordisk, Sanofi, Eli Lilly, Janssen, and Pfizer.

M. Laville received personal compensation for board participation and speaking fees over the last 5 years from Novo Nordisk, Pfizer. J. Aron Wisnewky has no conflict of interest to declare. E. Disse and J.-M. Oppert have no conflict of interest to declare. B. Gatta-Cherifi speaking fees from Lilly, Novo Nordisk. David Jacobi received personal compensation for board participation from Novo Nordisk. E. Montastier received speaking fees from Amgen. L. Gaillard is employed by Novo Nordisk, France. S. Czernichow received personal compensation for board participation and speaking fees from BMS, Fresenius, Lilly, Novo Nordisk, Janssen, Novartis, Boehringer, BariaTek.

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This study was financed by an unrestricted grant from Novo Nordisk.

### Author Contributions

C. Fabron: methodology, formal analysis. M. Laville: study design, methodology, data collection, data interpretation, writing – review and editing. J. Aron Wisnewky, E. Disse, B. Gatta-Cherifi, David Jacobi, E. Montastier, and J.-M. Oppert: data collection, data interpretation, writing – review and editing. L. Gaillard: study design, data interpretation. B. Detournay: study design, methodology, formal analysis, data interpretation, original draft writing. S. Czernichow: study design, methodology, data collection, data interpretation, writing – review and editing.

### Data Availability Statement

Data are not publicly available due to ethical reasons. Further inquiries can be directed to the corresponding author.

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