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Italian Survey on Perception of Obesity and Bariatric and Metabolic Surgery: A Comparison between General Practitioners and Obese Patients

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Abstract

Introduction: Obesity is a pandemic, chronic and relapsing disease with several treatment options.
The aim of this work was to investigate the level of awareness that people with obesity (PwO) have of their own condition and the level of knowledge regarding possible treatments available. To compare and contrast collected data on PwO with data obtained from general practitioners (GPs).

Methods: Data for this cross-sectional, non-interventional, descriptive study was collected via an online survey (CAWI methodology). 521 people were interviewed: 320 PwO and 201 GPs. Survey data were summarised in percentages and a 95% Confidence Interval (CI 95%).

Results: There is a lack of awareness of obesity as a disease among PwO. Firstly, most PwO (60%, 95% CI: 54%-65%) consider obesity to be an aesthetic problem and secondly a health problem (59%, 95% CI: 54%-65%). Conversely, 80% (95% CI: 74%-85%) of GPs consider obesity as a disease. The survey focus on the knowledge of bariatric and metabolic surgery (BMS) as a possible treatment option showed that only 12% of PwO (95% CI: 8%-16%) declared they had never heard about it, while 88% (95% CI: 84%-91%) declared they knew about it. Similarly, 95% (95% CI: 91%-98%) of GPs claim to know about BMS, but they recommended it only to 5% (95% CI:2%-9%) of their patients. In treating obesity GPs considered BMS less efficient than diet and physical activity (83% (95% CI: 77%-88%) vs 90% (95% CI: 84%- 93%)) and to be indicated mainly for patients with comorbidities which cannot be controlled otherwise.

Conclusions: Our results indicate that implementing awareness campaigns for patients and GPs is currently as essential as providing structured programmes for obesity treatment. Moreover, it is still necessary to sensitize GPs on BMS which should be considered a standard obesity treatment option in selected cases.

Level of evidence: Level V, cross-sectional, descriptive study.

Competing interests: The authors declare that they have no conflict of interest.

Ethical approval

In Italy, ethical approval was determined to be non-essential for a study of this nature based on regulatory standards andprevious studies. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study comply with the EU regulations for the Protection of personal data.

Informed consent: All respondents provided electronic informed consent prior to the initiation of the screening questions and survey.

Authors' contributions

IPSOS recruited, collected and analyzed the data, and designed the study (E.DS), D.T and CLA.G interpreted the data and wrote the first draft of the manuscript, CLA.G. and C.A. critically reviewed the draft of the article, S.B. supervised the statistical analyses, C.A. and A.G. are the guarantors of this work and, as such, had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analyses. All authors read and approved the final manuscript.

Keywords: obesity Management - Bariatric Surgery - Quality of Life - Computer-assisted interview - Self Perception

Introduction

The global obesity epidemic continues its unrelenting advance, with the number of people with excess body weight reaching >2 billion, 30% of the world population. No less than 3.4 million people die every year due to obesity comorbidities [1]. On the basis of recently published data [2] in 2017 in Italy, there were more than 23 million people who had excess body weight above the age of 18, of which approximately 18 million were overweight (35.4%) and over 5 million were obese (10.5%) (11.5% men; 8.9% women). In the period of time between 2001 and 2017, obesity rose primarily among people with a low level of education (from 11.9% to 14.2%) and an intermediate level of education (from 6.3% in 2001 to 9.8% in 2017) while it remained more or less stable for those with a high level of education (from6.9% to 6.6%). Diabetes (DM), hypertension (HTC) and cardiovascular diseases are present in 25.4% of the general Italian population and in 46.3 % of obese population (DM 6.7% vs 14.6%; HTC 21.2% vs 39.4%).

Due to its complexity obesity is a serious challenge for public health. To all effects, this condition is a chronic and relapsing disease with a complex pathogenesis [3,4]. Consequently, finding a single solution to the problem is not a path totake but it needs a synergistic and multidisciplinary approach [5-7].

Moreover, in the last years the stigma associated with obesity has been considered the major contributor to negative healthoutcomes and behaviors that can promote and exacerbate obesity, which is usually represented through negative stereotypes, unsuitable language and images [8].

A recent survey carried out by the Centre for Social Studies and Policies (CENSIS) [9] showed that a third of the Italian population feels correct to penalize people, such as smokers, alcoholics, drug addicts and even people with obesity, whocompromise their health through harmful lifestyles, with additional taxes or limitations to health care access within the National Health System.

Despite the fact that the World Health Organization (WHO) considers obesity a chronic disease and the concept is recognized as such by many national and international scientific organizations [4,6,10-12], only Portugal in the old continent has acknowledged this at a legislative level [2].

In the last few years, Italy has implemented policies to contrast the obesity phenomenon, especially within national and regional chronic disease prevention programs, which represent winning strategies in the battle against this increasing social health-emergency. Beside prevention, also several approaches are usually adopted in obesity treatment such as life-style changes, tailored diet programs and anti-obesity medications. Among them, Bariatric and Metabolic Surgery (BMS)is considered the most effective tool not only for weight loss but also for obesity co-morbidities in the short, medium andlog-term. Its greater effectiveness compared with conservative medical strategies has been demonstrated over the years by systematic reviews and meta-analysis of randomized controlled trials [13]. Despite scientific evidence, access to BMS remains incredibly low. The total number of bariatric/metabolic procedures performed in the world in 2016 was 685,874 [14]. In the same year, according to the WHO, the number of obese people in the world was 650 million [15]. This means that in 2016 only 0.1 % of patients who were eligible for surgery were operated including a variability of between 1.9 %in the Netherlands and 0.001% in China and Japan.

Our study aim to investigate, on a national scale, the level of awareness that the Italian PwO have of their condition and the level of knowledge regarding the possible treatments available. Moreover, another endpoint is to compare and contrastcollected data on PwO with data obtained from Italian general practitioners (GPs).

Materials and Methods

This study was designed and implemented by researchers in the IPSOS Italia Healthcare team and was realized with the not conditioned support of Johnson & Johnson Medical S.p.a. This research involved a cross-sectional, non- interventional, descriptive study that collected data via an online survey. The interviews were carried out in July - August 2017.

The aim of the study was to verify the obesity phenomenon, how it is experienced and managed using and comparing data collected from a survey carried out on a sample of Italian people with obesity (PwO; Body Mass Index - BMI ≥ 30 Kg/m^2) and on a representative sample of Italian general practitioners (GPs).

As far as PwO is concerned, the questionnaire was administered to 4000 families. 7323 members of these families, representative of the Italian population aged 18 and over were screened for weight, height and BMI. 48% of these subjectswere overweight or obese, in line with the epidemiologic data reported in the "1st Italian Obesity Barometer Report" [2]. Among them, 13% (952 subjects) were obese (BMI ≥30). These latter were subsequently sent the survey questionnaire and 320 interviews were obtained. The data from the 320 interviews were then weighted to obtain a representative sampleof individuals with obesity by geographical area, sex, age and educational qualification.

Regarding GPs, the survey was administered to 201 panelists. They were selected only on the basis of the geographical area and are representative of the GPs universe for this parameter (Ministry of Health data).

All the panelists provided informed consent electronically before they took part in the survey.

People with Obesity (PwO)

PwO (BMI ≥ 30 Kg/m^2) who participated in the survey were selected via screening questions out of a representative panelof the Italian population according to geographic area parameters, gender, age and level of education (source: National Institute of Statistics - *Istituto Nazionale di Statistica* - ISTAT). The participants to the survey filled in the survey themselves online and in their own home.

The survey, which lasted on average 15 minutes, addressed the following topics: obesity experience, management of theproblem, doctor's consultation and their role in the management of obesity, knowledge of BMS, willingness to undergo surgery and search for information on the subject of weight.

General Practitioners (GPs)

Interviews were carried out on a sample of GPs who were representative of a target category of health-care providers according to geographic area (Source: Italian Ministry of Health - *Ministero della Salute*). GPs filled in the survey themselves online. The survey, which lasted on average 15 minutes, addressed the following topics: cases, tendencies andbehaviour when managing obesity, treatment of obese patients, knowledge and tendencies regarding BMS, information regarding obesity.

Questionnaire Structure

The data were collected using the CAWI (Computer-Assisted Web Interview) technique. We used a specially designed e-questionnaire as our research tool, with branched tree structure, customized on the basis of the answers of the interviewees. A specific link was sent via email that the respondent proceeded to complete independently.

This method allows reaching a large number of respondents in a very limited time interval. There are no geographical limits of targets, but those who were not very familiar with computers and technology were excluded. Moreover, participants are autonomous in completing the questionnaire and can do so at a time of their choice and take all the time they need to respond. It offers the best efficiency in terms of costs andtiming. Any limits are related to the lack of comparison with the interviewer and the risk of abandonment by the respondent without having completed the interview.

The participants were asked:

• multiple choice questions.

• *ranking questions*, or rather questions in which is requested to put in order a sequence of options/answers according tothe order of importance or prevalence.

• questions whose answer requires the interviewee to enter a numeric data. For example: *what's your weight?*

• questions of satisfaction and appreciation. In particular, this type of questions includes 5 different answers: two with positive connotation, two with negative connotation and one neutral. It was used the Likert's scale associated with 5 categories of answers, in a scale from 1 to 5 points (where 1 is assigned to the answer with the major negative connotationand 5 refers to the answer with the major positive connotation).

• In particular, the survey administered to PwO consisted in 5 sections, investigating different obesity-related issues.

The first section encompassed a cluster of questions concerning overweight, the impact of obesity on patients' life's and obesity management: how participants understand and perceive obesity, relationship between obesity and other health issues, participants' opinion on treatments to lose weight and routinely problems associated to obesity.

The second section grouped a cluster of questions concerning physicians' role in treating obesity: the point of view of participants regarding treatments and the follow-up of their condition by the practitioners.

The third section regarded surgical treatment: the attitude of attendees toward BMS; their knowledge about BMS, medicaladvices, and what discourage them to undergo BMS.

The fourth section examined general attitudes by using a cluster of questions regarding participants' opinions on potentialcauses and related consequences of obesity.

Finally, the fifth section included a cluster of questions investigating whether interviewees looked for information concerning their condition: where participants looked for information about obesity, dieting, BS and correlation betweenobesity and cancer.

A second survey was submitted to GPs. Even in this case the survey consisted of 5 sections encompassing several clustersof questions which investigate GPs' knowledge and use of weight loss remedies, with a particular focus on BMS.

The first section explored anthropometric and a graphic characteristics of GPs' obese and overweight patients.Furthermore, comorbidities associated to such condition and causes leading to obesity were investigated.

Afterwards, obesity treatments were considered in a second section: GPs' suggested actions towards weight loss and theireffectiveness, if patients are monitored by specialists or GPs, and patients' goals.

In the third section surgical treatments were examined: the knowledge of GPs about BMS and its effectiveness,comorbidities associated to obesity and BMS, whether GPs' obese patients were willing to undergo BMS, if GPssuggested or discouraged their patients to undergo such surgical treatment and what worries obese patients about BMS. GPs' satisfaction over surgical treatments and what drove their choice to such treatments were analyzed in the fourthsection: what prompt GPs to suggest or to discourage BMS.

Last section investigated GPs' current knowledge about surgical treatments: specialized surgical centers, if GPs wantedto apprehend more about BMS and specialized centers.

In both surveys the questions were administered all in one session with topical dividers.

Elaboration of Data and Results

A descriptive analysis was carried out to evaluate survey data of 320 PwO and 201 GPs. Categorical variables were shownby percentage and Confidence Interval 95% (CI 95%), while continuous variables were shown by mean and 95% confidence interval. The differences between categorical variables were tested with the Chi-square test. All tests were two-sided and considered statistically significant at the 0.05 level. A sub-analysis was carried out to compare data of 180patients with BMI between 30-34.9 kg/m^2 (group A) and 140 patients with BMI - 35 kg/m^2 (group B). All analyses wereperformed using SAS 9.4 (SAS Institute, Inc, Cary, NC, USA).

Results

The sample of 320 PwO was composed by subjects who came from all over Italy. They were equally divided between women and men (51% vs 49%) and 31% of the interviewees were older than 64 yr. The profile of the population examinedis summarized in Table. 1. 24% (95% CI: 19%-28%) of PwO admitted to not being broadly satisfied of their lives. According to weight gain and the duration of the disease, there was a statistically significant increase of dissatisfaction. Indeed, 18% (95% CI: 12%-24%) with BMI 30-34.9 kg/m^2 (group A) and 32% (95% CI: 25%-41%) of interviewees withBMI 35 kg/m^2 (group B) made reference to a low degree of satisfaction (Not really satisfied + Not satisfied at all) of quality of life (p=0.004) (Table. 2). The survey showed that 60% (95% CI: 54%-65%) of PwO declared that it considers obesity to be an aesthetic discomfort, 59% (95% CI: 53%-64%) a health and physical efficiency problem (tiredness, struggle with everyday movements), 47% (95% CI: 41%-53%) a psychological distress in relationship with themselves and 42% (95% CI: 36%-47%) a distress in social relationships. Moreover, the 2 groups were statistically different in theirgeneral perception of obesity with a worse trend of group B as an aesthetic problem (group A: 52% (95% CI: 44%-59%)vs group B: 71% (95% CI: 62%-78%); p=0.0006), physical efficiency (group A: 52% (95% CI: 44%-59%) vs group B: 69% (95% CI: 60%-76%); p=0.002), psychological distress in relationship with themselves (group A: 39% (95% CI: 32%-46%) vs group B: 57% (95% CI: 48%-65%); p=0.001) and distress in social relationships (group A: 36% (95% CI:29-43%) vs group B: 49% (95% CI: 40%-57%); p=0.02). On the contrary, there were non-statistically significant differences between the two groups regarding perception of obesity as a health problem (group A: 58% (50%-65%) vs group B: 60% (51%-68%) p=0.72). (Table. 3 and in Figure. 1).

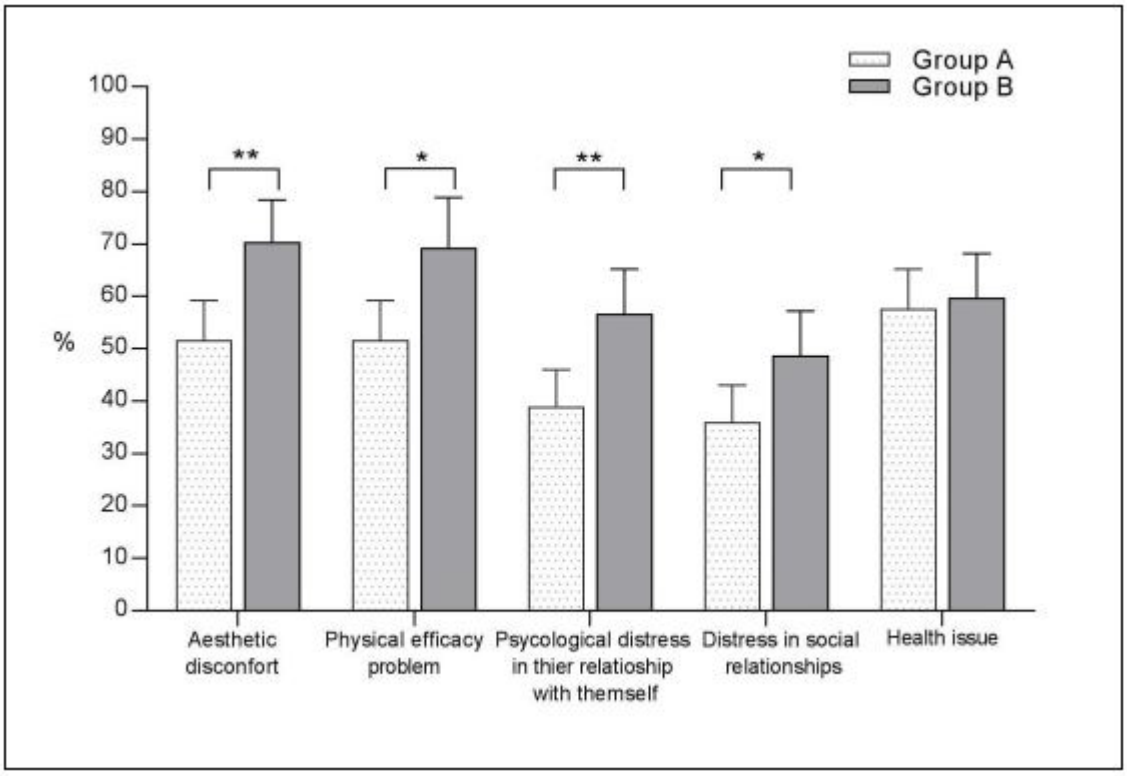

Figure 1. PwO's opinion regarding obesity (*p<.05, **p≤.01) (Group A: BMI 30-34,9 kg/m2 ,Group B: BMI ≥ 35 kg/m2) (PwO: Patients with Obesity)

Geographic area	
North West	22%
North East	22%
Centre	23%
South and Islands	33%
Gender	
Man	49%
Woman	51%
BMI	
>=30 BMI <35	56%
>=35	44%
Age	
Up to 34 yo	17%
35/44 yo	18%
45/54 yo	18%
55/64 yo	16%
over 64 yo	31%
Level of Education	
Primary school	24%
Middle school	41%
Hgh school	26%
University Degree	9%
Occupation	
Entrepreneur/Freelance	5%
Craftsman/Trader	15%
Manager/Officeworker/Teacher	
Labourer/Clerk	10%
Student	3%
House wife	21%
Retired	32%
Unemployed	11%

B	**GPs**
Geographic area	
North West	25%
North East	17%
Centre	21%
South and Islands	37%
Gender	
Man	79%
Woman	21%
Age	
Up to 55 yo	14%
55-60 yo	30%
61-65 yo	41%
Over 65 yo	15%
Mean	≈61
Years of experience	
Up to 25 yrs	20%
26-30 yrs	21%
31-35 yrs	30%
Over 35 yrs	29%
Mean	≈31

Table 1. Profile of **A** Obese Patients (PwO) and **B** General Practitioners (GPs)

	PwO	**Group A**	**Group B**	**P-Value**
	(%)	**(%)**	**(%)**	
Very satisfied	2	2	1	
Quite satisfied	38	49	25	
Neutral	36	31	42	.004
Not really satisfied	16	16	15	
Not satisfied at all	8	2	17	

Table 2. PwO's grade of satisfaction about the quality of life (PwO: Patients withObesity, Group A: BMI 30-34,9 kg/m2, Group B: BMI ≥ 35 kg/m2)

	PwO % (CI 95%)	Group A % (CI 95%)	Group B % (CI 95%)	p-value
Obesity consideration				
Aesthetic discomfort	60 (54-65)	52 (44-59)	71 (62-78)	**0.0006**
Physical efficiency problem	59 (53-64)	52 (44-59)	69 (60-76)	**0.002**
Health issue	59 (53-64)	58 (50-65)	60 (51-68)	0.72
Phychological distress in their relationship with themselves	47 (41-53)	39 (32-46)	57 (48-65)	**0.001**
Distress in social relationships	42 (36-47)	36 (29-43)	49 (40-57)	**0.02**
Motivation to lose weight				
Lack of will	46 (30-53)	51 (42-61)	39 (29-51)	0.10
Inefficacy of remedies taken in the past	38 (31-45)	35 (27-45)	43 (31-54)	0.26
'I'm feeling well in my current situation'	14 (9-20)	15 (9-23)	11 (5-19)	0.43
No efficient remedies to lose weight	9 (5-14)	8 (4-15)	10 (4-18)	0.62
Remedies to lose weight				
''Selfmade" diet	51 (43-58)	57 (48-67)	44 (33-55)	0.0001
Tailored diet under medical surveillance	35 (30-41)	29 (20-38)	42 (31-56)	0.05
Regular Physical Activity	29 (24-34)	31 (22-40)	27 (18-38)	0.54
Supplements	12 (9-16)	14 (8-22)	9 (3-16)	0.28
Antiobesity Drugs under medical surveillance	3 (1-5)	1	5 (1-10)	0.09
Surgical Treatment	2	-	4 (1-10)	
Psychological therapy	2	1	3	0.30
Knowledge of BMS				
Never heard about it	12 (8-16)	10 (6-15)	15 (10-22)	0.18
Knew about it	88 (84-91)	90 (85-94)	85 (80-90)	

Table 3. PwO's opinion regarding obesity, lack the motivation to lose weight, remedies to lose weight and knowledge of BMS (PwO: Patients with Obesity, Group A: BMI 30-34,9 kg/m2, Group B: BMI ≥ 35kg/m2)

The major health comorbidity indicated were joint problems (47% (95% CI: 41%-53%)), hypertension (38% (95% CI: 32%-43%)), circulatory problems (32% (95% CI: 27%-37%)), struggle with everyday movements (30% (95% CI: 25%- 35%)), gastro-esophageal reflux (24% (95% CI: 19%- 29%)), hypercholesterolemia (21% (95% CI: 17%-26%)) and diabetes (18% (95% CI: 14%-22%)) (Figure.2) The PwO answered about obesity management that 62% (95% CI: 56%-67%) were doing or had done something to improve their pathological condition (group A: 64% (95% CI: 56%-71%) vsgroup B: 60% (95% CI: 51%-68%)). 38% (95% CI: 32%-43%) of PwO (group A: 36% (95% CI: 29%-44%) vs group

B: 40% (95% CI: 32%-49%)) do anything and half intended to lose weight in the near future. One of the main motivations,not-statistically different between the subgroups, is a lack of will (group A: 51% (95% CI: 42%-61%) vs group B: 39% (95% CI: 28%-50%); p=0.10). However, the analysis showed other non-statistically significant trend as long follow-up inefficacy in maintaining results (group A: 35% (95% CI: 27%-45%) vs group B: 43% (95% CI: 32%-55% p=0.26) (Table.3). 49% (95% CI: 43%-54%) of PwO was little or not satisfied with results from remedies taken (group A: 45% (95% CI: 38%-53%) vs group B: 54% (95% CI: 46%-62%); p=0.11). More than half PwO 51% (95% CI: 43%-58%) followed a "self-made" diet (group A: 57% (95% CI: 48%-67%) vs groupB: 44% (95% CI: 33%-55%); p=0.0001) or followed a tailored weight loss diet under medical follow-up 35% (95% CI: 30%-41%) (group A: 29% (95% CI: 20%-38%) vs group B: 42% (95% CI: 31%-56%); p=0.05) (Table. 3).

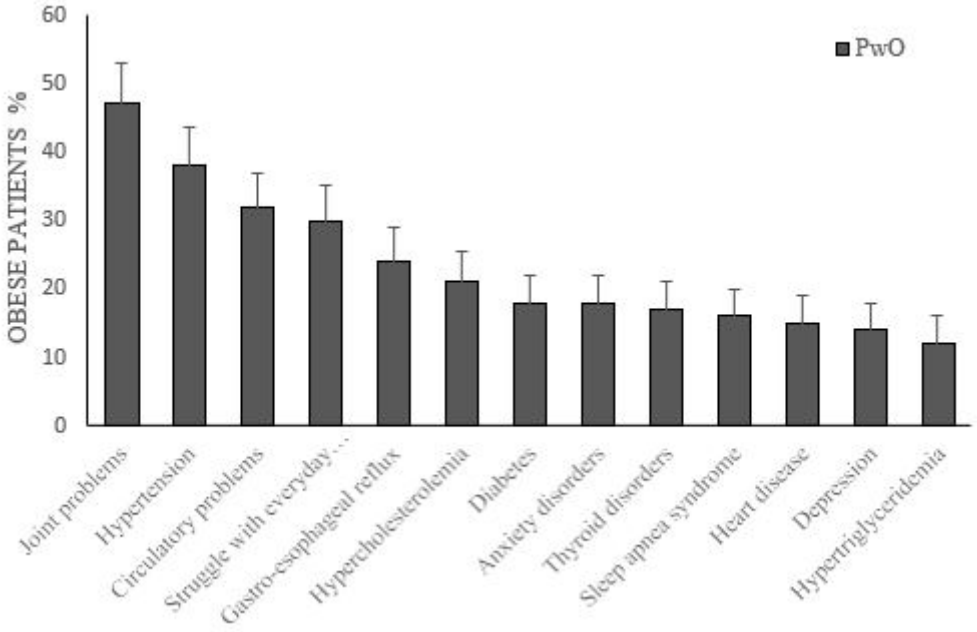

Figure 2. Major health comorbidity indicated by PwO (PwO: Patients with Obesity)

Obesity treatment goals were to improve their quality of life (45% (95% CI: 36%-51%)), the desire to lose weight (30% (95% CI: 25%-35%)) and the desire to control/ameliorate diseases associated with being overweight (25% (95% CI: 20%-35%)) (Figure. 3). 35% (95% CI: 30%-41%) of those who lost weight consulted a doctor and, in detail, 68% of them consulteda nutritionist/dietician, 25% a diabetologist, and 20% an endocrinologist. There was a non-statistically significant trend between 2 subgroups of consulting an obesity specialized Centre (group A: 36% (95% CI: 23%-52%) vs group B: 51% (95% CI: 38%-64%); p=0.12). Specialized physician present indication to PwO of a diet in 85% (95% CI: 80%-89%), physical activity/movement in 67% (95% CI: 61%-72%), to use supplements for weight loss in 12% (95% CI: 9%-16%)of cases, to undergo bariatric surgery only in the 8% (95% CI: 5%-11%) of cases. The analyses haven't shown statisticallysignificant differences between two subgroups except the use of supplements (group A: 25% (95% CI: 4%-41%) vs groupB: 3% (95% CI: 1%-10%); p=0.0005). Moreover, the survey focus on the knowledge of BMS showed that only 12% of PwO (95% CI: 8%-16%) declared they had never heard about it (group A: 10% (95% CI: 6%-15%) vs group B: 15% (95% CI: 10%-22%), while 88% (95% CI: 84%-91%) declared they knew about it (group A: 90% (95% CI: 85%-94%) vs group B: 85% (95% CI: 80%-90%)) (Table. 3). In detail, they knew about gastro-restrictive (84%), metabolic (69%) and271 malabsorptive (46%) surgery. In 14% of cases the proposal came from their GP while in the rest of cases, 86%, fromspecialists. The most advised BMS were gastro-restrictive surgery (66%), metabolic surgery (14%) and malabsorptive surgery (6%). BMS was not considered a future therapeutic option for 77% (95% CI: 68%-78%) of PwO due to the collateral effects (41% (95% CI:35%-47%), unexpected issues during surgery (44% (95% CI: 38%-50%) and socio- economic problems (24% (95% CI: 19%-29%). Finally, the weight loss maintenance in the long-term follow-up was considered an important topic for 35% (95% CI: 30%-41%) of PwO. The survey showed the same major relevance between subgroup about the fear of adverse events post-surgery (group A 40% (35-48%) and group B 50% (44%-57%)).BMS was not considered a future therapeutic option for 77% (95% CI: 68%-78%) of PwO, with a reduction to 61% (95%CI: 56%-67%) if it had been indicated by a specialist to 61% (95% CI: 56%-67%) and without difference in the 2 subgroups (group A: 60% (95% CI: 52%-67%) vs group B: 62% (95% CI: 54%-70%); p=0.72) (Table. 4).

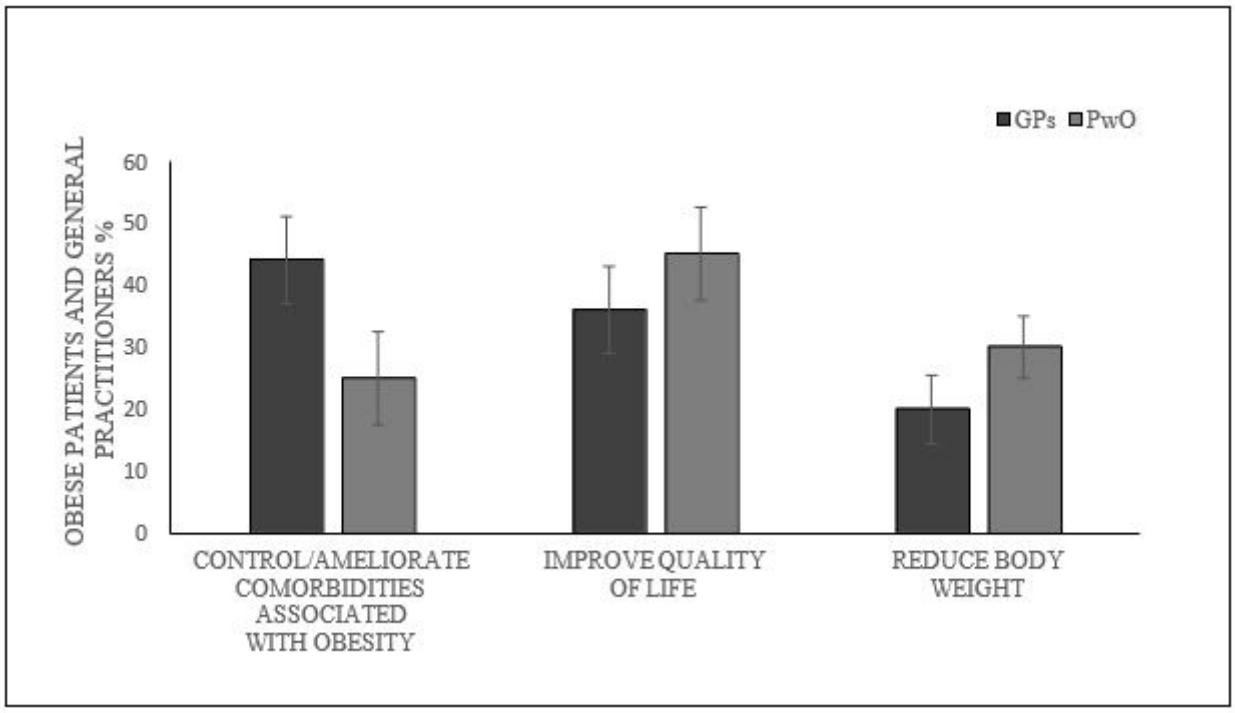

Figure 3. Patients and General Practitioners' goals (PwO: Patients with Obesity)

	Group B (%)	*95% CI*
Collateral effects	51	45-57
Unexpected issues during surgery	50	44-57
Belief that it was not suitable	27	22-32
Costs entailed	26	21-31

Table 4: Group B's adverse opinion on BMS (GruppoA: BMI 30-34.9 kg/m2; Gruppo B: BMI ≥ 35 kg/m2)

Another survey was administered to a representative sample of 201 GPs from all over Italy. 79% of those interviewed were men. GP profiles have been summarized in Figure. 4. Each GP had an average total number of patients of 1390, of which 18% were obese (BMI ≥ 30 kg/m2). and the 48% of them were men. 19% were up to 34 years old, the majority (45%) were between 35 and 59, the other 36% were over 60 years old. The 56% of obese patients had a BMI 30-34.9 kg/m2, 31% had a BMI 35-39.9 kg/m2 and 13% had a BMI ≥ 40 kg/m2 (Figure. 4). The most common comorbidities associated to severe obesity (BMI ≥ 35) were hypertension (24% (95% CI: 18%-30%)), hypercholesterolemia (21% (95% CI: 15%-27%)), diabetes (21% (95% CI: 15%-27%)), joint pain (18% (95% CI: 13%-24%)), and hypertriglyceridemia (16% (95% CI: 11%-22%)). GPs correlated obesity to social models (86% (95% CI: 80%-90%)), genetic/hereditary familiarity (72% (95% CI: 65%- 78%)), psychological fragility (49% (95% CI: 42%-56%)), physical problems and pathologies (33% (95% CI: 26%-40), and sedentary lifestyle (4% (95% CI: 2%-8%). The survey shown that 47% (95% CI: 40%-54%) of GPs' patients with severe obesity were followed by a specialist doctor or specialist Centre. The treatment provided by GPs were diet and physical activity (54% (95% CI: 47%-61%)), a specialist visits with dietologist,nutritionist or an endocrinologist (22% (95% CI: 16%-28%)), a specialist Centre for the treatment of obesity (10% (95% CI: 6%-15%)). GPs considered BMS more effective than diet and physical activity in the long follow-up (83% (95% CI: 77%-88%) vs 90% (95% CI: 84%-93%)); p=0.04). Pharmacological therapy was considered effective in the 24% (95% CI: 18%-30%). GPs targets were control/ameliorate pathologies associated with obesity (44% (95% CI: 37%-51%)), improve patient's lifestyle (36% (95% CI: 29%-43%)) and weight loss (20% (95% CI: 15%-26%)) (Figure. 2). 95% of GPs interviewed stated that they had knowledge of the existence of BMS. GPs agreed that gastro-restrictive BMS was the most efficient treatment (57% (95% CI: 50%-64%)) and was indicated for patients with severe obesity (72% (95% CI: 65%-78)). In detail the 88% (95% CI: 82%-92%) of GPs considered patients with BMI ≥ 40 kg/m2, eligible for bariatricsurgery, while 21% (95% CI: 15%-27) evaluated BMS for patients with BMI between 35 and 39.9 kg/m2. 70% of GPs considered BMS indicated for obese

patients with comorbidities without any other therapeutic option. The pathologies which were retained contraindications to BMS were circulatory problems (59% (95% CI: 52%- 66%)), diabetes (53% (95% CI: 45%-59%)), sleep apnea (36% (95% CI: 29%-43%)) and peripheral arteriopathy (30% (95% CI: 24%-37%)) but the best motivations behind a patient's dissuasion to undergo BMS were a lack of patient conviction (70% (95% CI:63%-76%)), inadequate pre-surgery physical condition (36% (95% CI: 29%-46%)), a lack of indications by the specialistCentre only 21% (95% CI: 15%-27%) of cases. Benefits of BMS were general improvement health (84% (95% CI: 78%-88%)), knowing reference of bariatric Centre (69% (95% CI: 62%-75%)), initial compliance of PwO (72% (95% CI: 65%-78%)). The disadvantages of BMS were post-surgery side effects (69% (95% CI: 62%-75%)), maintenance of results(47% (95% CI: 40%-54%)), and complications during surgery (45% (95% CI: 38%-54%)). GPs would like to know about surgical treatment in the 41% (95% CI: 34%-48%).

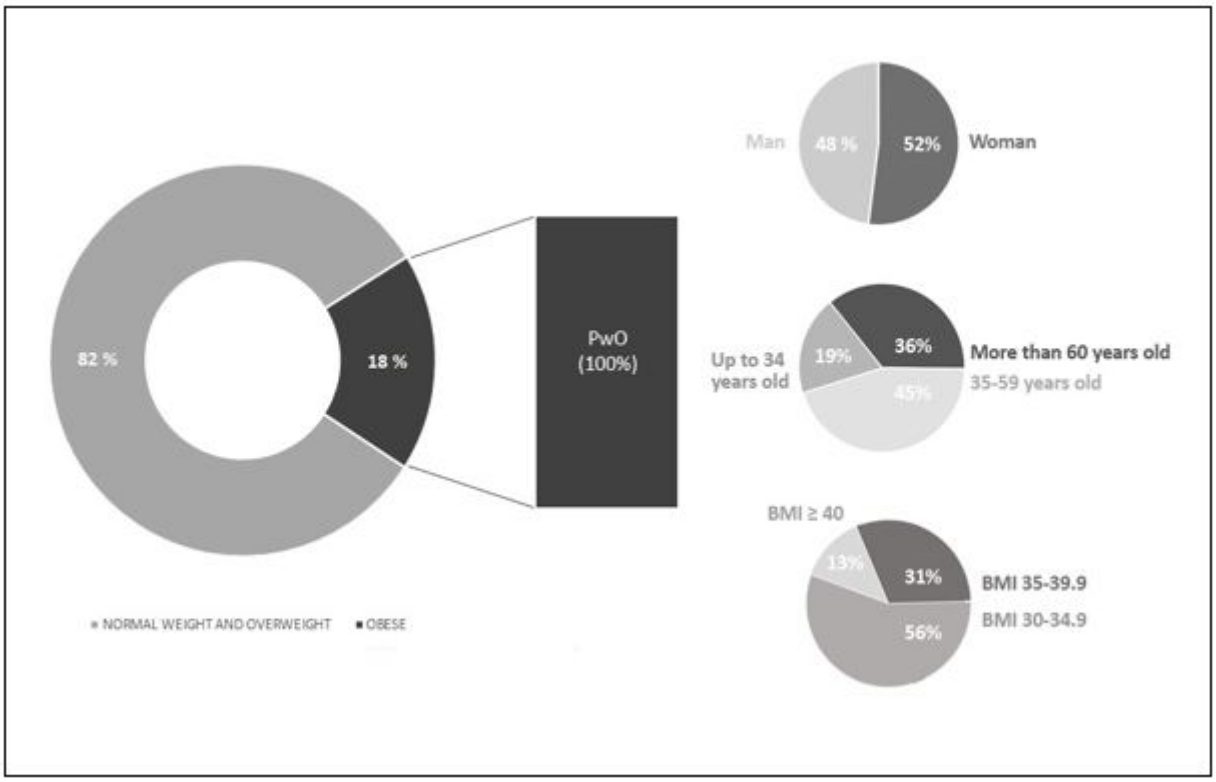

Figure 4: General Practitioners' (GPs) patients (PwO: Patients with Obesity)

Discussion

In this study we carried out a survey on a sample of 320 PwO (BMI-30 kg/m^2), representative of the Italian population,analysing their level of knowledge regarding obesity as a disease and the possible treatments available. The results werecompared with the answers obtained from a representative sample of 201 GPs from all over Italy regarding the same topics.

The survey revealed that only 24% of PwO admitted to being little to not at all satisfied with their lives, with an increaseof dissatisfaction as BMI increased and the condition of being obese increased (Table.2). In addition, most PwO consideredobesity to be firstly, an aesthetic problem and secondly, an issue affecting health, physical efficiency and psychological distress (Table. 3). The higher the BMI, the higher the awareness that obesity is a disease, while, paradoxically, the perception of obesity as an aesthetic problem does not change.

The high aesthetic value of distress related with obesity can partly be due to social contextualization in which being overweight/obese can be a penalizing factor not only as far as health is concerned but also from a relational and psychological point of view. The

failure to adhere to the aesthetic archetype of thinness ends up discriminating obese people, who are attributed with personality and behavioral traits to be stigmatized [2].

Comparing data in our study with data found in the US ACTION (Awareness, Care, and Treatment in Obesity management) study [16] and the ACTION-IO (International Observation) study [17], we noticed that Italian patients have a lower tendency to acknowledge obesity as a disease (59 % vs 65% US ACTION - 68% ACTION-IO, respectively).

This finding was even more emphasized by a recent paper on the Italian data extracted from the ACTION-IO study [18]. Moreover, in a survey carried out by the European Association for the Study of Obesity (EASO) [19], obesity was recognized as a disease only by 46 % of PwO interviewed, but if only Italian interviewees are taken into consideration within the EASO study, the result goes up to 62%, a figure which can be overlapped with the results in our study. The EASO study also showed that Italian interviewees were less aware with respect to other European citizens with regards to obesity as a cause and/or a contributing factor of diabetes, joint and spinal column pathologies, hypertension, heart attack and tumors.

Italian GPs were, to all effects, in line with the international scene regarding obesity as a chronic, relapsing disease (80%vs 80% US ACTION - 88% ACTION-IO, respectively). It is interesting to note how Italian GPs acknowledge the coexistence of social models and stimuli which favour an incorrect diet and a genetic/hereditary component, at times associated with a psychological fragility, as the main causes of obesity. Endocrine disease and/or organ or body disfunction have a lower percentage and were retained less determinant. Surprisingly, only 4% of GPs considered a sedentary lifestyle a real cause for obesity. On the other hand, patients interviewed attributed an important role to hereditygregarding the onset of the disease, followed by the conditioning factor of today's society and individual psychological fragility (Figure. 1). PwO's perception of feeling partially responsible for their condition of obesity, as weak, without self- control, seems to be one of the major reasons to explain their resistance and/or failure during various dietary treatments [20]. This difference in perception of obesity as a disease is also reflected in the goals that PwO had set themselves with respectto those set by a GP for obesity treatment (Figure. 3). For patients, their main objective was to improve their quality of life,followed by weight loss and lastly, control/ameliorate obese-related pathologies. GPs, on the other hand, knew that to contrast obesity the main aim is to control/ameliorate comorbidities followed by improving quality of life and only marginally, reducing weight.

In our study 38% of PwO had not done or was not doing anything to lose weight. This is a higher rate than in the EASOstudy [19] which reported 17%. The current study shows that the main motivations that prompted PwO to not want to modify their current condition were:lack of willpower and the inefficacy of previous treatments in weight loss maintaining in the long term. The chronic and relapsing nature of the disease induces patients to give up after repeated failure of diet attempts. Another important factorthat often contributes to giving up, as demonstrated in one third of PwO referred a judgment of other people about their physical state which caused a great stress. Social stigma was and continues to be much discussed in literature [21].
This data suggests that there is a need to offer structured, efficient treatment not only for obesity prevention but also for its cure.

Among the remedies taken by PwO there was a prevalence of "self-made" diets followed by "professionally-directed" weight loss diets and regularly doing physical exercise. The use of medically prescribed drugs or BMS was only taken into account by a small minority of PwO. In addition, the rate of dissatisfaction with results obtained was very high, in fact only 11% of PwO was satisfied.

Paradoxically, the advice given by GPs to obese patients was the same as what the patients had in part done but with poorresults: to follow a tailored diet plan and to do more exercise. Only 22% of patients were advised to go to a specialist (dietologist, nutritionist, endocrinologist), only 10% to go to a specialist obesity care Centre and only 5% to go to a BMSspecialist Centre. GPs retained that a tailored diet associated with exercise was the most efficient treatment in terms of weight loss, which is in contradiction to their own belief that a sedentary lifestyle is the cause of obesity in only 4% of the cases.

In treating obesity, GPs considered BMS less efficient than diet and physical activity (83% (95% CI: 77%-88%) vs 90%(95% CI: 84%-93%)) and to be indicated mainly for patients with comorbidities which cannot be controlled otherwise, which means that BMS is considered as the last therapeutic chance for complex patients.

In addition, GPs place little trust on pharmacological treatments for obesity. This data is consistent with what PwO declared as being the advice received from their GP to deal with obesity. A similar trend was also described in the US ACTION study [16].

This study revealed that BMS was known as a treatment by the patients and the physicians interviewed. Despite the factthat BMS is the most effective treatment in producing sustainable weight loss and improvements in obesity-related comorbidities [15] and despite that 95% (95% CI: 91%-98%) of GPs claim to know about BMS, they recommended it onlyto 5% (95% CI: 2%-9%) of their obese patients.

There was a lack of knowledge among GPs concerning the pathologies to be considered contraindicated for BMS. Paradoxically, what was considered a contraindication in reality are precisely those pathologies that actually represent anindication for BMS (if associated with obesity), such as vascular problems, diabetes, sleep apnea and hypertension.

PwO stated that when surgery had been proposed as a treatment option, the suggestion came from their GP only in 14% of cases, confirming GP's reluctance to indicate BMS. The prevailing motives that prevent GPs from suggesting BMS were: post-surgery adverse effects, weight regain in the long term and any complications during surgery. This data suggests that BMS is still often perceived as a dangerous surgery and highlights as certain preconceptions are deeply rooted in part of the medical profession.

The introduction of laparoscopy, of high-performance surgical instruments and the continuous development of increasingly refined surgical techniques, allowed the development of ever higher security standards, guaranteeing a rapidpost-operative recovery and an excellent quality of life over the years [22].

Doubts preventing PwO from undergoing bariatric surgery were similar to those expressed by GPs. The majority of PwOalso thought that BMS is a path to be taken only in specific cases and as a last therapy option.

If it is generally accepted among clinicians the obesity is to be regarded as "a chronic, relapsing, multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences" [23], then patients with obesity should receive more structured treatment than a simple "eat less and exercise more".
To further understand some of the dysfunctional dynamics involved in the management of obesity, it may be useful to make a parallelism between diseases. Lung cancer is a fatal disease if not adequately treated, which involves smoking asa well-known risk factor. Obesity is a potentially fatal disease which has overeating and sedentariness as known risk factors. If a doctor visits a patient affected with a suspected lung lesion and simply recommended giving up smoking anddid not refer the patient to a specialist, a pneumologist/thoracic surgeon/oncologist, he/she certainly delays the diagnosis of the disease and worsens the prognosis, not allowing the patient to access care. Not only would the doctor not have donehis/her job but he/she would be legally liable. Attitude towards therapy in the treatment of obesity seems to continue to be different. Despite obesity being universally recognized as an endemic pathology, it continues to often be treated as a simple risk factor [24].

"Globesity" is today responsible for a total cost of approximately 2 trillion dollars, which corresponds to 2.8% of the global gross domestic product. What is more, the indirect costs, in terms of loss of productivity and related gains, are at least double the direct costs (hospitalization and medical care). It is estimated that in 2012 in Italy, excess weight accounted for 4% of national health expenditure, a total of approximately 4.5 billion euro, a trend that is in constant growth. For all these reasons, obesity must be considered to all intents and purposes as a health problem with high social,economic and political priority, acknowledging the fact that it is a highly disabling disease [2].

Strength and limits

This study highlights how the perception of obesity as a disease is actually low among a sample of subjects affected by obesity, representative of the Italian population. Another important finding emerged by this survey is how BMS is still little recommended by Italians GPs as a standard treatment for obesity in selected cases. Limitations of this study may include its descriptive nature, reliance on self-reported height and weight and accuracy of respondent recall.

Conclusions

Obesity is, to all effects, a chronic and relapsing disease with complex pathogenesis that has reached a level of pandemicspread [2,4,6,10-12]. However, from our study it emerged that there is a lack of awareness of obesity as a pathology amongPwO. In addition, despite BMS being the most effective treatment in producing sustainable weight loss and improvementin obesity-related co-morbidities [13], up to now only 0.1% of BMS eligible patients have been surgically treated [15]. Our study shows that although 95% of GPs claim to know about BMS, they recommended it only to 5% of their obese patients,considering BMS less efficient than diet and physical activity and to be indicated mainly for patients with comorbiditieswhich cannot be controlled otherwise.

In view of the data collected, we believe that it is a priority to continue with the campaigns to raise awareness on obesityas a disease and not as an aesthetic problem to be stigmatized. Moreover, it is of great importance to involve GPs more in the management of obesity of their patients, suggesting structured treatments, on a multidisciplinary level, within specialist Centers for obesity cure. It is also necessary to sensitize GPS to consider BMS as a standard treatment option for obesity, perhaps via training and refresher initiatives.

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