The prevalence of overweight and obesity among fish sellers in the Central Market of Gemena City and some of its determinants

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Abstract :
A study on the prevalence of overweight and obesity was carried out among female fish vendors in the central market of Gemena town. The results indicate that out of a study population of 38 female fish vendors surveyed: 47.3% were overweight and 44.7% were obese. Some parameters were observed as possible determinants: seniority in the profession, number of children of each respondent. It was found that 83.34% of the overweight respondents had been in the profession for more than 5 years, 94.2% of the obese respondents had been in the profession for more than 5 years, 88.2% of the obese respondents had 3 or more children, 88.9% of the overweight respondents had 3 or more children.

Keywords : - overweight, obesity, saleswomen, fish.

I. INTRODUCTION

A few decades ago, the problem of overweight and obesity was considered to be a problem of industrialised countries and affluent people in the cities of developing countries. The lifestyle in these countries makes people more sedentary and leads to excessive and unbalanced eating. This style of food consumption has largely contributed to the increased prevalence of obesity [1].
Described as a global epidemic by the World Health Organisation (WHO), obesity has in recent years continued to mobilise the medical community, to question the various scientific bodies, to challenge the political world and to make headlines in the media. Its consequences are manifold, not only in terms of health but also in economic and human terms. The rise in obesity is one facet of the spread of a new epidemiological and demographic transition to the countries of the South, which is expressed by the increase in mortality due to non-communicable diseases [2].

Obesity is on the rise worldwide and now affects nearly 650 million adults, or 13% of the world's adult population, according to a study published Friday 1 April in the British medical journal The Lancet. According to the study, the percentage of overweight people could reach 20% by 2025, if the current rate of progress of this epidemic continues. "In forty years, we have gone from a world where underweight was twice as important as obesity to a world where obese people outnumber underweight people," says Professor Majid Ezzati of Imperial College London, who coordinated the study.

It is presented as one of the most comprehensive surveys on the subject to date and is based on data on some 19 million people aged 18 and over, living in 186 countries.

By extrapolation, it estimates the number of obese adults at 641 million in 2014, including 375 million women and 266 million men. In 1975, there were only 105 million. This explosion is linked in particular to a rich industrial diet, but also to genetic predisposition [3].

It is ironic that as developing countries continue their efforts to reduce hunger, some are facing the opposite problem of obesity. Obesity carries a higher incidence of chronic diseases, including diabetes, cardiovascular disease and cancer. And while some poor people are becoming overweight, they are not necessarily better nourished because obesity often masks vitamin and mineral deficiencies [4].

Obesity is increasingly common in Africa. It is a direct consequence of socio-economic development and lifestyle changes that lead to a higher consumption of high-calorie foods and a more sedentary lifestyle. In addition, there are various representations and beliefs that encourage voluntary weight gain [5].

A 1999 United Nations study found that obesity exists in all developing regions, and is increasing rapidly even in countries where hunger is rife. Even sub-Saharan Africa, where most of the world's undernourished people live, is experiencing an increase in obesity, particularly among women in urban areas. In all regions, obesity seems to increase with income growth [4].

In several countries in Africa, obesity has reached epidemic proportions and levels above 30% are documented in adults. Urbanisation and socio-economic development remain the most important determinants to explain this trend. Indeed, they are accompanied by a shift in diet towards energy-dense content and a reduction in physical activity. This results in many people having a positive energy balance with more calories consumed than expended [5].

The DRC in general is not spared from this new pathology, which is overweight and obesity, and its prevalence in 2007 in Kinshasa was evaluated at 19%;3 the town of Gemena in particular is not exempt from this scourge, which leads us to ask the question of whether women selling fish in the central market of Gemena are victims of overweight and obesity? The answer to this question is our hypothesis.

The prevalence of overweight and obesity is reportedly high among women fish sellers in the central market of Gemena.

Therefore, the overall objective of the present study is to assess the nutritional status of women fish sellers in the central market of Gemena town with the aim of documenting it in terms of percentage of overweight, obesity and good nutritional status.

The specific objectives were as follows:
- Identify socio-demographic characteristics ;
- Assessing nutritional status through anthropometry

I.   RESEARCH METHODOLOGY

The methodology has two aspects. The first deals with the geographical location of the study site and the study population. The

second aspect develops the different methods and techniques used, the mode of data processing and analysis.

3.1Population and Sample
The population of the present study consists of women fish sellers in the central market of Gemena.

3.2 Data and Sources of Data
The study is of the cross-sectional, single-pass type, conducted using non-probability survey methods in site selection and sampling.

Interviewing was used as a data collection technique supported by anthropometry.

The sample for this study was drawn in two stages, the first being market choice and the second being women.

In the first stage, the central market of Gemena was drawn by the non-probability method, taking into account criteria such as accessibility, time and availability of sellers.

In the second stage, women were selected using the non-probability method using the interview technique and finally anthropometric measurements were taken.

Only women meeting the following selection criteria were included in the sample:
- To be a recognised female fish seller in the central market;
- Be present at the table on the day of the data collection;
- Voluntarily agree to participate in our study.

Data collection was made possible by taking anthropometric measurements supported by the interview technique. Equipment such as scales and micro-cups were used to take anthropometric measurements that could help determine the nutritional status of each woman.

After collection, the data were manually processed for coding of questions and answers before being entered into the computer using Excel. The choice of Excel was motivated by the ease of correcting errors made during data entry by using the filter to check the consistency of responses.

3.3 Theoretical framework

Interpretation was done according to the modal frequencies of each modality. The variables and their values are defined below.

Table 1.   Definition of Variables and their values

| N°	Variables	Definition	Values
01	Age	This is the period the respondent has lived from birth to the time of the survey expressed in years past.	18-24 years 25-31 years 32-38 years 39-45 years 46-52 years old 53-59 years old 60-66 years
02	Marital status	It is the status of a person according to whether they are married, single or widowed	Married Single Widow
03	Seniority	Number of years spent in the profession of fish seller in completed years	1-5 years 6-11 years 12-16 years 17-21 years 22-26 years 27-31 years 32-36 years old 37-41 years
04	Number of children	This is the number of children each vendor has given birth to.	1-2 children 3-4 children 5-6 children 7-8 children 9-10 children 11-12 children
05	Nutritional status by BMI	It is a reflection of a person's body mass as measured by the body mass index.	Good nutritional status Overweight Obesity

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statics of Study Variables

The various results of this study are set out in the tables below
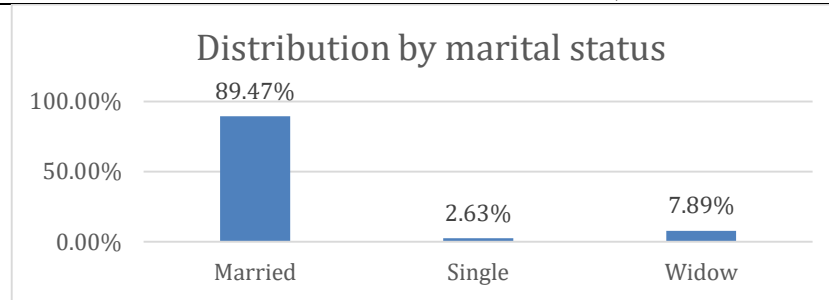
Table 2. Distribution of respondents by age

Age	Frequency (n=38)	Percentage
18-24 years	2	5,3
25-31 years	5	13,2
32-38 years	11	28,9
39-45 years	10	26,3
46-52 years old	4	10,5
53-59 years old	3	7,9
60-66 years	3	7,9

Distribution of respondents by age
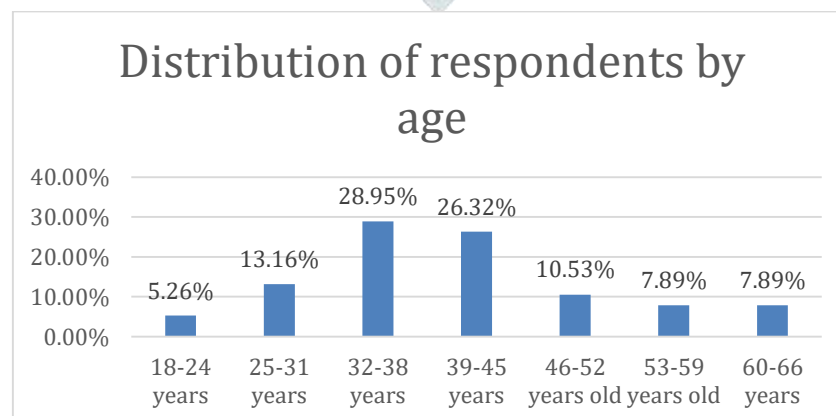
The table above shows that most of our respondents are in the 32-38 age group with a frequency of 11 (28.9%), followed by the 39-45 age group with 10 (26.3%). The 18-24 age group is the least represented, with 2 or 5.3%.

Table 3. Distribution by marital status

Marital status	Frequency (n= 38)	Percentage
Married	34	89,5
Single	1	2,6
Widow	3	7,9

Distribution by marital status

This table shows that our respondents are more likely to be married, 34 or 89.5%. Widows and single women are in the minority, respectively 3 or 7.9% and 1 or 2.6%.

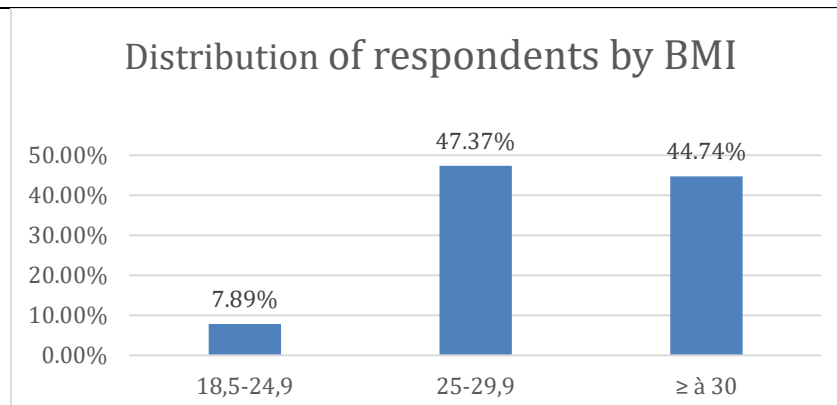Table 4. Distribution of respondents according to their length of service in the profession

Seniority	Frequency (n=38)	Percentage
1-5 years	5	13,2
6-11 years	6	15,8
12-16 years	6	15,8
17-21 years	4	10,5
22-26 years	5	13,2
27-31 years	6	15,8
32-36 years old	2	5,2
37-41 years	4	10,5

Distribution of respondents according to their length of service in the profession
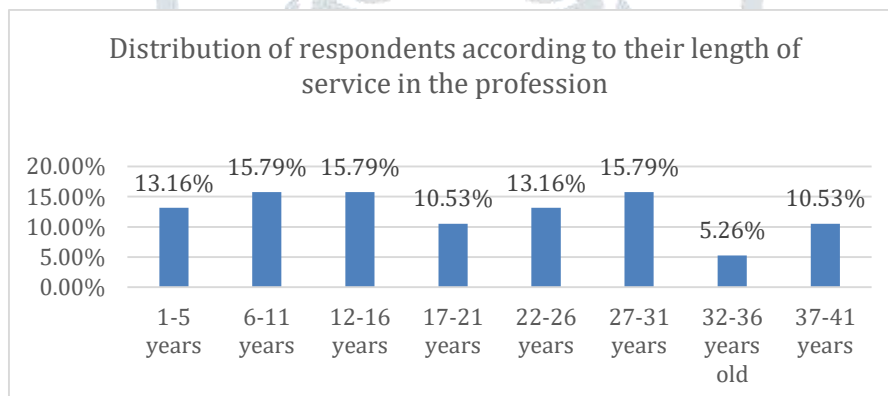
The results of this table show that respondents who have been selling fish for 6-11 years, 12-16 years and 2.31 years are more represented with a frequency of 6 or 15.8% respectively. Those who have been selling fish for fewer years are less represented with a frequency of 2 or 5.2%.
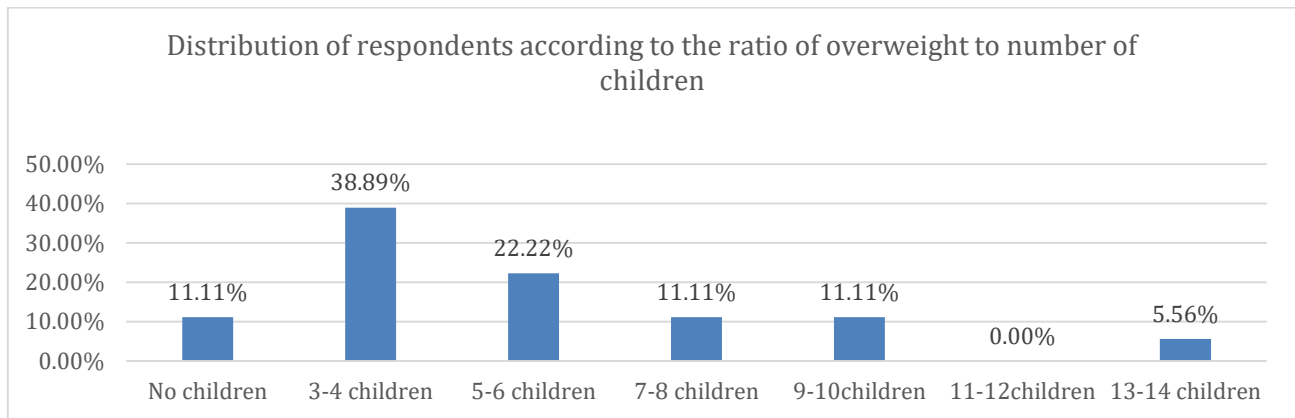
Table 5. Distribution of respondents by BMI

BMI	Frequency (n=38)	Percentage
18,5-24,9	3	7,9
25-29,9	18	47,4
≥ à 30	17	44,7

Distribution of respondents by BMI

This table shows that most of our respondents are overweight, 18 or 47.4%, followed by obese, 17 or 44.7%. Only 3 (7.9%) of the respondents were in good nutritional condition.

Table 6. Distribution of respondents according to the ratio of overweight to number of children
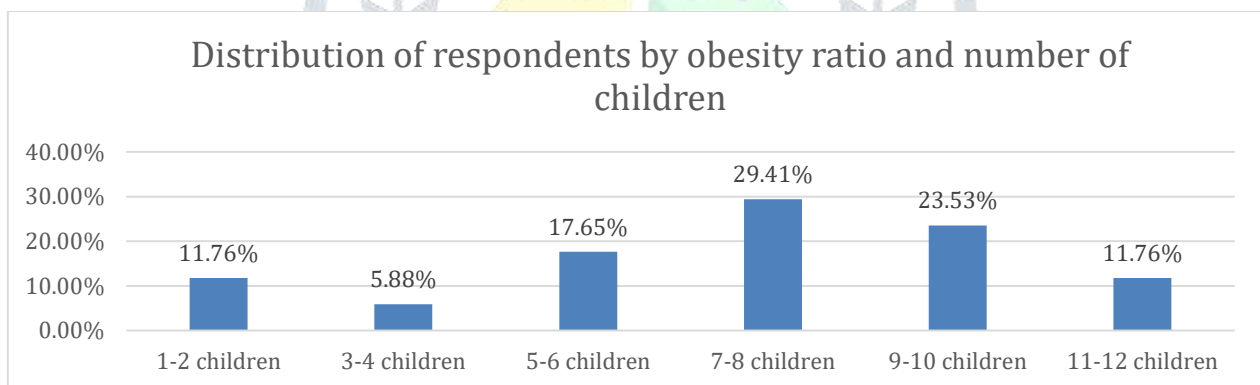
Number of children	Frequency (n=18)	Percentage
No children	2	11,1
3-4 children	7	38,9
5-6 children	4	22,2
7-8 children	2	11,1
9-10children	2	11,1
11-12children	0	0
13-14 children	1	5,6

Distribution of respondents according to the ratio of overweight to number of children

This table shows that most of the overweight respondents have 3-4 children, 7 or 38.9%, followed by those with 5-6 children, 4 or 22.2%. Some of them have no children, 2 or 11.1%.

Table 7. Distribution of respondents by obesity ratio and number of children

Number of children	Frequency (n=17)	PERCENTAGE
1-2 children	2	11,8
3-4 children	1	5,9
5-6 children	3	17,6
7-8 children	5	29,4
9-10 children	4	23,5
11-12 children	2	11,8

Distribution of respondents by obesity ratio and number of children

The above table shows that among the obese, most have 7-8 children, 5 or 29.4% followed by those with 9-10 children, 4 or 23.5%.

Table 8. Distribution according to the ratio of overweight to seniority in the profession

Seniority	Frequency (n=18)	Percentage
1-5 years	3	16,7
6-11 years	2	11,1
12-16 years	5	27,8
17-21 years	1	5,5
22-26 years	1	5,5
27-31 years	3	16,7
32-36 years old	1	5,6
37-41 years	2	11,1

Distribution according to the ratio of overweight to seniority in the profession
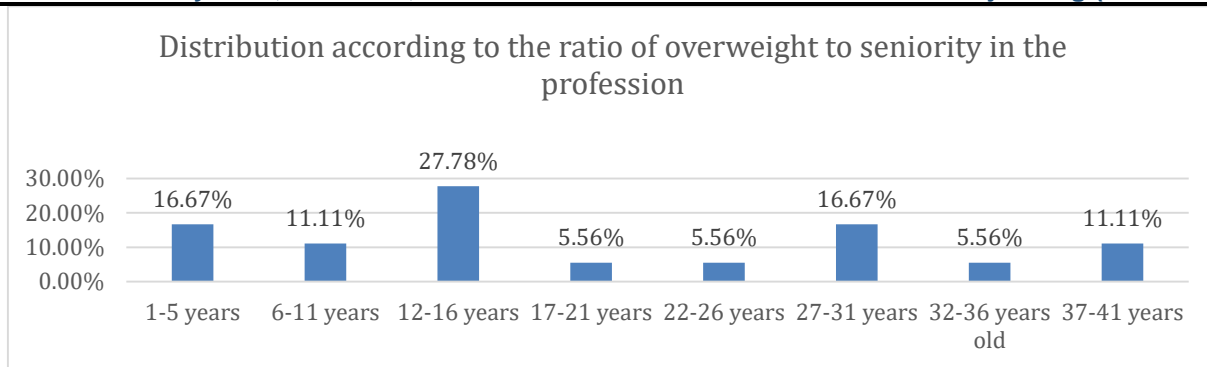
The table shows that most of our overweight respondents had been selling fish for 12-16 years, 5 or 27.8%, followed by those who had been selling for 1-5 years and 27-31 years, 3 or 16.7% respectively.

Table 9. Distribution according to the ratio of obesity to seniority

Seniority	Frequency (n=17)	Percentage
1-5 years	1	5,9
6-11 years	4	23,5
12-16 years	1	5,9
17-21 years	2	11,8
22-26 years	3	17,6
27-31 years	3	17,6
32-36 years old	1	5,9
37-41 years	2	11,8

Distribution according to the ratio of obesity to seniority)
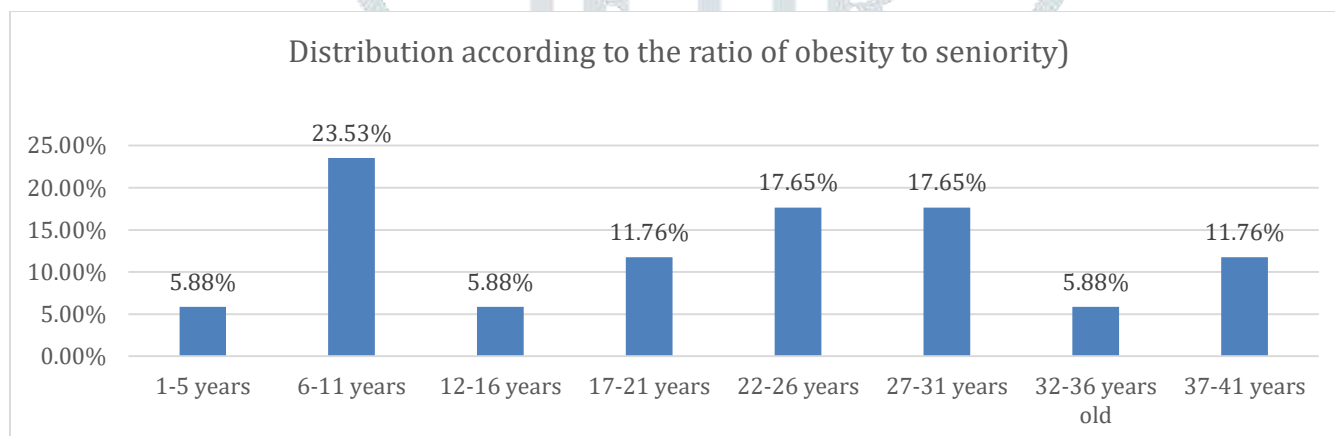
This table shows that the majority of our obese respondents took 6-11 years to sell fish, 4 or 23.5%, followed by those who took 22-26 and 27-31 years respectively, 3 or 17.6%.

The study revealed that our respondents were more likely to be in the 32-38 age group, i.e. 28.9%. MULAMBA NA et al in their work on "Etude de quelques déterminants de l'obésité chez les femmes vendeuses au marché de la commune urbaine de Matete à Kinshasa" (Study of some determinants of obesity among women vendors in the urban commune of Matete in Kinshasa) found that the 40-44 age group was in the majority[4], Coulibaly & Al found that 30-49 years old were more represented (71.83%) on a sample of 13,663 women of childbearing age[6] . The non-matching could be justified on the one hand by the range of the age group considered by the researcher and on the other hand by the size of the sample. We worked with 38 women vendors while the MULAMBA group worked with 149 vendors and finally Coulibaly et al analysed data from 13663 women.

47.4% of the respondents are overweight and 44.7% are obese. This proves a health problem among the women selling fish in the central market of Gemena in view of the prevalence throughout the world, as reported in a study published on Friday 1 April in the British medical journal The Lancet. According to the latter, the percentage of overweight people could reach 20% by 2025, if the current rate of progression of this epidemic is maintained[3]. CAMILE PLAS in his thesis found 20.1% overweight and 14.4% obese [7]. C.Nono et al reported 34% overweight and 33% obesity in their study [8]. Joanne Matta et al found 25.3% overweight in women and 15.6% overall obesity with an abdominal obesity of 48.5% [9]. The high percentage of overweight and obesity in our study could be justified by the fact that the study focused on an occupational category and especially that female food sellers are always in close proximity to food during the performance of their duties and therefore could have an influence on eating behaviour and the maintenance of a positive caloric balance.

The study shows us that 83.3% of the overweight respondents have been in the profession for more than 5 years, and 94.1% of the obese respondents have also been in the profession for more than 5 years. We have no link to establish between seniority in the fish trade and the occurrence of overweight and obesity, but we hypothesise that the saleswomen spend a good part of the day sitting (sedentary) on the one hand, and on the other hand, being surrounded by food (cafeteria, restaurant, pastry shop, etc.), could be significant factors for the occurrence of overweight and obesity. Our hypothesis is confirmed by the study of Kamasu Demaison Talimula & Al, they found that food (80.7%) and sedentary lifestyle (68%) were cited first as risk factors for overweight and obesity [10].

88.9% of the overweight respondents had 3 to 14 children, while 88.2% of the obese respondents had 3 to 12 children. Parity could have an effect on the occurrence of overweight and obesity in our study. M.Baguma et al

confirmed in their study that very large multiparous women had 4 times more frequently a waist circumference ≥ 100 cm compared to pauci parous women [11].

CONCLUSION

At the end of our study based on the prevalence of overweight and obesity among women fish sellers in the central market of Gemena with the general objective of assessing the nutritional status of these women fish sellers in order to document in terms of percentage of overweight, obesity and good nutritional status. In pursuing this objective, we set ourselves the following specific objectives To identify the women fish sellers; To determine their age and seniority in the profession;

To assess their nutritional status through anthropometry. We hypothesised that the prevalence of overweight and obesity would be high among women fish sellers in the central market of Gemena. To arrive at the data that proved analyzable and interpretable, we used a survey technique supported by anthropometric measurements. We used non-probability convenience sampling, i.e. we limited ourselves to taking measurements only from women who were present on the day of the data collection.38 Our sample consisted of female vendors. Our results can be summarised as follows: The majority of our respondents are between 32-38 years of age, i.e. 28.9%; 89.5% of the respondents are married; some of our respondents have been in the profession for 37-41 years, i.e. 10.5%, and those who have been in the profession for 1-5 years are 13.2%; 47.4% of respondents are overweight, while 44.7% are obese; most of the overweight respondents have 3-4 children (38.9%) and 5-6 children (22.2%);

Among the obese, the majority have 7-8 children, i.e. 29.4%; 83.3% of overweight respondents have been in the profession for more than 5 years; 94.1% of obese respondents have been in the profession for more than 5 years.

II. ACKNOWLEDGMENT

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