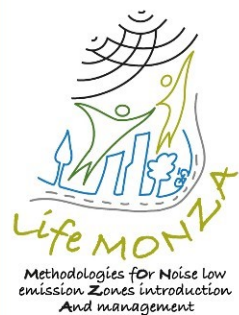




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**Data on the perception of living conditions and the
quality of the environment by “Liberty District” ’
residents- 2. Second section of the questionnaire**

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Data on the perception of living conditions and the quality of the environment by the "Liberty district" 'residents - 2. Second section of the questionnaire

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Abstract

The protracted exposure from noise leads to hearing loss, cardiovascular, gastrointestinal, nervous-psycho changes and annoyance. Recent estimates state that around 125 million Europeans experience average annual noise levels above 55dB. Thus, the LIFE MONZA project was born, to reduce noise in a Monza' district, through limited traffic areas, interventions on infrastructures and analyzes on the quality of life of residents. The project provides semi-structured questionnaires to neighborhood residents with a "pre-test" phase, to define the ex-ante situation, and a "post-test", after the implementation of the interventions. The statistical analysis of the data was carried out for both phases. The sample consisted of 177 and 140 questionnaires, in first and second phase respectively; the subjects are mostly women (77), married / living together (95) and employed (62). They report a good quality of life (60%), a fair level of concentration and a satisfactory quality of sleep (43%). In relation to the home, 75% of the subjects most exposed to noise positively evaluate their quality of life, they report satisfactory health conditions (60%) and enjoy life enough (78%); concentration levels are defined as good or very good in 62.5% and 31.3% respectively and 46.9% are satisfied with how they sleep. Finally, 65% of the sample report negative thoughts on rare occasions. From the first analysis, we believe that the structural interventions made to the neighborhood have improved the quality of life of the residents in general; in fact, contrary to the first phase, we did not find a significance between the typical noise-related psychophysical symptoms and the location of the houses in post phase after interventions.

Introduction

The Law of October 26, 1995, n.447 and subsequent amendments defines noise pollution as "noise in the living environment or in the external environment such as to cause discomfort or disturbance to rest and human activities, danger to health, deterioration of ecosystems, material goods, monuments, the external environment or such as to interfere with the use of the rooms themselves "(1). In urban areas, this type of pollution can mainly derive from vehicular traffic, railways, air transport, construction works, industries and recreational activities, etc (2). Recent statistics estimate that as many as 125 million European citizens are exposed to road traffic noise levels above average annual levels of 55 dB but these figures could actually be significantly higher. This exposure leads to the perception of discomfort for 20 million inhabitants, the appearance of sleep disturbances for 8 million and is responsible for over 40 thousand hospitalizations. In addition, some 8000 children in Europe have difficulty reading and concentrating, in areas with air traffic noise near to school buildings (3). It is now known that prolonged exposure to noise can lead to damage both at the auditory level, with the onset of perceptive hearing loss, and at the extra-auditory level, with alterations mainly affecting the cardiovascular, gastrointestinal, nervous-psycho and annoyance systems. In fact, studies report that around 25% of the EU population experience a deterioration in quality of life due to annoyance and between 5-15% suffer from sleep disturbances (4). Continuing economic growth, the increase in industrial production, growing urbanization and related transport needs, noise levels will continue to increase in European countries, with consequences for the health of all citizens. It therefore becomes essential to encourage the collection of data on exposure to

noise, encourage various countries to develop their action plans and focus on reducing sources. With these purposes, the LIFE MONZA project was born, to develop and evaluate the management of a "Noise Low Emission Zone" (Noise LEZ), a low-noise urban area subject to road traffic restrictions and improvements, regarding the quality of life for "Liberty district" residents of Monza. The project included several strategies to reduce noise in the neighborhood, including the creation of a restricted traffic area for trucks and interventions on roads system and public buildings. In addition, we have analyzed the effects on air quality and well-being conditions of residents in the neighborhood.

Methods

We have launched a diachronic sample survey, through the administration of semi-structured questionnaires to representative samples of the residents of the Liberty district. The project involved two surveys: a "pre-test", aimed at defining ex-ante situation and a "post-test", for the analysis of the conditions after infrastructural interventions. The questions were divided into a general section (with socio-personal data and concerning housing, the perception of quality of life, air pollution, noise, mobility and knowledge of the project) and a more specific section (on quality of personal life, annoyance, social relationships). The "pretest" questionnaires were administered in February-March 2018; they were sent by post and delivered directly by the interviewees to designated collection centers (Liberty Civic Center and Carlo Porta High School). The same methods of administration (April-June 2019) and delivery were provided for the "post-test" questionnaires. The statistical analysis of the data was then carried out, both in the "pre" and in the "post" phase. In particular, through the Chi Square, T-Student and Anova tests, any associations were sought between two "key" variables ("does your home overlook Liberty Avenue?"/"Approximate distance of the home from Liberty Avenue") and informations about socio-personal data, house, quality of life, air pollution, noise, health and annoyance.

Results

The "post-test" questionnaires were 140 in total, of which 93 were paper, 34 online and 13 not belonging to the sample but to residents of the neighborhood. The analysis shows that the sample has an average age of 55.5 years (SD 16.9), 77 subjects are female (55%), 68 (49.8%) have obtained a high school diploma and 41 a degree, 95 are married / cohabiting (69.8%) and 24 (17.6%) are unmarried; finally, 62 (44.9%) have a job, 9 are unemployed and 67 (48.5%) are retired, students or housewives.

Below, we report the main results by analyzing each item of the questionnaire concerning the state of health (physical and psychological) and some characteristics of the homes of the sample examined.

Does your house overlook Liberty Avenue?	Yes No	32 (23%) 107 (77%)
Distance from Liberty Avenue (in meters)	0-30 31-100 >100	28 (20%) 71 (50.7%) 41 (29.3%)
Is there something wrong with your health?	Yes No	33 (23,6%) 83 (59,3%)
How do you evaluate your quality of life?	Bad Not bad Not good Good Very good	4 (2,9%) 33 (23,6%) 85 (60,7%) 9 (6,4%)
Can you concentrate on the things you do?	Not much Enough Much Very much	7 (5%) 61 (43.6%) 46 (32.9%) 17 (12.1%)

Are you satisfied with how you sleep?	Very dissatisfied Dissatisfied Not dissatisfied- Not satisfied Satisfied Very satisfied	1 (0.7%) 18 (12.9%) 34 (24.3%) 61 (43.6%) 16 (11.4%)
Do you ever experience negative feelings (bad mood, anxiety or depression)?	Never Rarely Quite often Very often	15 (10.7%) 87 (62.1%) 26 (18.6%) 1 (0.7%)

Analyzing the individual questions in relation to the house's position, some frequencies must be highlighted. For example, among those who overlook Liberty Avenue, as many as 75% evaluate their quality of life positively, 62% report satisfactory health conditions and 78% enjoy life enough. The reported levels of concentration are good ("quite" in 62.5% and "very" in 31.3%), 46.9% are satisfied with how they sleep but it should be emphasized that over 18% are not. Finally, 65% report negative thoughts only rarely.

In relation to the distance of the house from the avenue, other aspects are highlighted. Residents within 30 meters report more often something wrong with their health (21.4% vs 12% over 100m); in fact, those who live at a distance from the boulevard report "very good / good" physical health conditions more frequently than the nearest inhabitants (12.2% vs 3.6%).

The 67.9% of the sample within 30 meters enjoys life enough but the percentage drops for higher levels (3.6% vs 14.6% in over 100 meters), concentration levels are higher among those overlooking the avenue ("enough" 46% vs 36% in the over 100 meters), as well as the quality of sleep (42% are satisfied within 30 meters vs 36% over 100). Finally, those who live within 30 meters most often report negative feelings ("often / very often" 28.6% / 3.6% vs 19.5% in over 100).

Subsequently, the items of the quality of life questionnaire were analyzed in relation to the location of the home and the distance from Liberty Avenue, giving a score to the quality of life responses. Below are the main results, in terms of significant associations to the Pearson Chi-Square test.

Does your house overlook Liberty Avenue?	Can you concentrate on the things you do?			
	Not much	Enough	Much/Very much	Not know
Yes	12.5%	78.1%	6.3%	3.1%
No	29%	44.9%	17.7%	8.4%
	Value	gl	P value	
Chi-Square	11.750 ^a	5	0.039	

Does your house overlook Liberty Avenue?	Are you satisfied with the support of your friends?			
	Dissatisfied	Not Dissatisfied Not Satisfied	Satisfied/Very	Not know
Yes	18.8%	37.5%	43.7%	0
No	5.6%	23.4%	58.9%	12.1%
	Value	gl	P value	
Chi-Square	14.000 ^a	5	0.016	

Distance from Liberty Avenue	Are you satisfied with the ability to engage in activities?			
	Dissatisfied	Not Dissatisfied Not Satisfied	Satisfied	Not know
0-30 m	7.1%	10.7%	75%	7.1%
31-100	2.8%	9.9%	81.7%	5.6%
>100 m	14.6%	19.5%	51.2%	14.6%
	Value	gl	P value	
Chi-Square	16.249 ^a	8	0.039	

Conclusions

Despite the limitations of the study in question, such as the small size of the sample, the sub-optimal mismatch between the "pre" / "post" phase and the lack or incompleteness of some responses from the interviewees, we want to highlight some important aspects that emerged from this evaluation. In the "pre" phase, a significant association emerged between some negative symptoms related to poor quality of life (sleep disturbances and difficulty concentrating) and the house's position near the Avenue (5). In fact, the subjects most exposed to urban noise presented the typical symptoms of the phenomenon in question. In the "post" phase, this significance is not found.

We could therefore hypothesize, or at least not exclude, that the structural interventions on the neighborhood had a positive impact on the lives of the residents.

Instead, other aspects have always been highlighted in relation to the home's position, such as a greater social network, a more positive attitude in enjoying life, satisfying relationships with friends.

However, we believe that these reported aspects are attributable to many and heterogeneous factors to be investigated, including socio-economic factors, income, age.

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