VIEWS OF URBAN AND SUBURBAN RESIDENTS OF LAHORE REGARDING ENVIRONMENT AND ITS ASSOCIATION WITH REPORTED FREQUENCY OF COMMON AILMENTS

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ABSTRACT

This study was conducted to ascertain the health status of people living in urban and suburban areas of Lahore. It determined the level of variance and correlation between the health status of people living in the aforementioned areas with its environment.

A quantitative cross-sectional survey was conducted to gather the results. Data was collected with the help of a questionnaire based on a five-point scale.

One way ANOVA was conducted to test the hypothesis and the results revealed that people living in suburban areas are healthier (p< .005) in comparison to people living in urban areas. The Pearson correlation results (.272) revealed that a positive direct correlation exists between the health of residents and the environment in which they live.

Keywords: variance, correlation, cross-sectional, health status, environment, urban, suburban

INTRODUCTION

The environment of an area consists of air, water, and land. The increase in population polluted not only the environment of that area but also put pressure on available resources, required to maintain a clean and healthy environment. All human beings have a natural requirement for shelter. Maslow, a psychologist, arranges human needs in a pyramid.

Figure 1. Maslow's Need Hierarchy

Maslow places physiological needs i.e. air, water, food, shelter, clothing and reproduction in the base of the pyramid. He put forward this hierarchy model to motivate people to work efficiently and effectively. A human being goes through different developmental phases in his life from childhood to adulthood and from home to the workplace. These needs arise again and again and motivate him to improve his efficiency and help him to achieve high esteem. House is a place where all these needs grow, fulfilled and cherished.

The migration of people from rural areas to urban areas in search of better living standards is a well-known phenomenon. This urbanization leads to overpopulation in urban dwellings; resulted in congested houses, polluted air, water, land and less greenery. Deforestation in urban land to adjust to the growing population of cities increases the nitrogen level in the air. (Rao et al., 2014) proved in their research an increase in the landscape in urban spaces decreases NO2 level in air as a result less respiratory problems occur.

Thickly populated areas have a high load of traffic which contributes to air pollution. (Künzli et al., 2000) conducted research in Austria, France, and Switzerland on air pollution contribution to mortality and morbidity. They find out that 6% of mortality was because of air pollution and half of it was because of traffic pollution. This research also reported more than 25000 new cases of chronic bronchitis (adults); more than 290000 cases of bronchitis (children); more than 0.5 million asthma attacks. Air pollution is

considered one of the major reasons for mortality; killing 0.3 million people every year. The international agency for cancer research considers air pollution a major health problem in October 2013. Air pollution is always higher in densely populated areas of Africa and South East Asia and low and middle-income countries (Guillerm & Cesari, 2015).

(Vries et al., 2003) hypothesizes that "people living in greener areas are healthier than people living in less green areas". Ten thousand people of the same socio-economic level and demographic reported that greenness of the living environment has a stronger relationship with health. In a green environment, people report less physical and mental illnesses

The land use in urban planning needs an in-depth study of built and open space ratio, green, and blue space percentage and landscape. There are a lot of researches that emphasizes that greenery and landscape in residential areas reduce pollution and improve the physical and mental health of inhabitants. Lee and Maheswaran, (2011) described the relationship between physical and mental well-being with the availability of green spaces outside the house. This study highlighted that green spaces in urban areas can increase physical activities like walk and exercise of old age people thus contributing to their mental and physical wellbeing.

In another study, (Abraham et al., 2010) compiled a literature review of 120 studies about landscape impact on human health and wellbeing. This study identifies that landscape in any area promotes mental wellbeing through attention restoration, stress reduction and evoking positive emotions. Along with physical health, it promotes also social interaction.

A survey between (2010-12) finds out that there is an association between green spaces in an urban area and resident's physical and mental health. It further proved that women and respondents from a less densely populated area more healthy physically and mentally (Triguero-Mas et al., 2015).

(Ward Thompson & Aspinall, 2011) describe the relationship between the use of natural open spaces with health, physical activity, and quality of life. The targeted population for this study was underprivileged, minorities, and older adults. They suggested that exposure to the natural environment for all segments contributes to relaxation, peace of mind, and social interaction.

There is very strong evidence of the connection between nature and human health. (Nieuwenhuijsen et al., 2014) established that human beings' connection with the natural environment reduces stress, improves physical health and social interaction.

The quality and quantity of the natural environment have strong therapeutic effects also. The researchers emphasize that land should be planned in such a way so that residents can maximize the benefits of the natural environment.

In one study done in the UK, male cardiovascular disease and respiratory disease mortality rates decreased with increasing green space, but no significant associations were found for women. (Kingdom, 2010) .

The city of Lahore has a rich historical background starting from Mughal architecture to a modern one. This city expanded from the old walled city to modern towns. Now it has multiple "Housing Societies" on the east, west, north, and south. It is important to note that every "Housing Society" of Lahore has its bylaws

Therefore, the placement of parks, streets, residential and commercial areas in every society follows Lahore Development Authority bylaws. But these rules are sometimes violated in LDA planned residential areas. Johar Town is an area developed by LDA, at one time it was located in a Suburban area but now it is the city centre. Baharia Town is another area that is a "Housing Society" developed by a private land developing authority and is located away from the city of Lahore. The present research is conducted to achieve the following objectives;

To study the level of variance in the environment of urban and suburban areas.

To ascertain the health status of people living in urban and suburban areas of Lahore.

To find out the correlation between environment and health.

This study tested the following hypothesis

H1: People living in suburban areas consider their environment healthy in comparison to urban areas

H2: The environment of any area is correlated with the health of residents of that area.

METHOD

The following section elucidates the study design and methodology used for this research to determine the health status of urban and suburban areas residents concerning the environment. It was a quantitative cross-sectional study to determine the resident's health problems related to the environment in both areas. And to find out the intensity of pollution in both areas. The universe for this research comprised of the urban and suburban settlements in Lahore. Residents were the sampling unit of this research. A purposive sampling technique was used to select the sample. Feedback was gathered from both genders males and females.

Table 1. Demographics of the Study

Characteristics	Numbers	Percentage
Gender		
Male	11	30%
Female	26	70%
Age		
25-35	26	70.2%
35-45	4	10.8%
45-55	3	8.10%
55-65	4	10.8%
Occupation		
Retired	01	2.7%
Housewife	09	24.3%
Professionals	13	35.1%
Other	14	37.8%
Monthly Income		
50,000	11	30%
1,00000	15	40.5%
150000	7	18.9%
200000 or more	4	10.8%
Education		
Matric	01	2.7%
Intermediate	06	16.2%
B.A/BSc	23	62.1%
Other	07	18.9%

The residents who could fill the questionnaire participated in this study. The respondents living in these localities for more than one year are included in the research.

The tool for data collection was a questionnaire, first part demographic information and second part resident's self-reported health and environmental status of the area.

Keeping in view the ethical aspects of research, enough time was given to the respondents to respond to every question. The consent form was provided to the respondents before data gathering to ensure their voluntary participation in this study. The information obtained was kept confidential no information regarding any participant was disclosed to anyone.

In data analysis, all questions related to air quality, water purification, park facility, street cleaning, etc were used as an indicator for environmental assessment. The question related to diseases like diarrhea, flu, respiratory tract diseases, etc were used as health indicators.

SPSS (Statistical Package for Social Sciences) software was used for the generation of descriptive and inferential findings of the study

RESULTS

This study was undertaken to ascertain the environmental issues like land, air-water pollution faced by the residents. The residents of the selected area are divided into two categories urban society and suburban society. This section highlights the significant findings computed by SPSS.

Table 2. Environmental Assessment of Both the Areas.

Respondents' Environmental Assessment	Areas	Strongly Agree	agree	Neutral	Disagree	Strongly Disagree	Total
Do you have any awareness about pollution	Urban	59%	37%	3%	3%	0%	100%
	Suburban	76%	13%	11%	0%	0%	100%
This area is generally polluted	Urban	30%	27%	27%	16%	0%	100%
	Suburban	3%	14%	3%	46%	35%	100%
Streets are cleaned regularly in this area	Urban	30%	19%	16%	16%	19%	100%
	Suburban	62%	27%	8%	3%	0%	100%
Air is clean in this area	Urban	19%	19%	24%	19%	19%	100%
	Suburban	32%	49%	19%	0%	0%	100%
Do you feel tap water in this area is contaminated	Urban	27%	27%	30%	16%	0%	100%
	Suburban	0%	30%	19%	41%	11%	100%
Do you prefer using water purifiers at home for drinking	Urban	41%	27%	27%	5%	0%	100%
	Suburban	19%	41%	22%	14%	5|%	100%
Too much crossing of heavy traffic in this area	Urban	11%	27%	30%	30%	3%	100%
	Suburban	0%	5%	30%	43%	22%	100%
Do you believe that an increase in health problems is due to pollution	Urban	65%	24%	11%	0%	0%	100%
	Suburban	30%	37%	19%	5%	8%	100%
Do you have a proper waste disposal system in this area	Urban	19%	24%	22%	14%	22%	100%
	Suburban	54%	41%	3%	3%	0%	100%
Do you have a parking facility in your area	Urban	27%	43%	22%	8%	0%	100%
	Suburban	51%	41%	5%	3%	0%	100%
There are proper care and maintenance of the environment from pollution in this area	Urban	19%	11%	30%	22%	19%	100%
	Suburban	41%	35%	11%	11%	3%	100%
Do you feel there is a proper sewerage system in this area	Urban	14%	19%	37%	8%	22%	100%
	Suburban	46%	46%	3%	5%	0%	100%
Do you believe your area is aesthetically pleasing	Urban	3%	30%	41%	14%	14%	100%
	Suburban	41%	32%	24%	3%	0%	100%
	Suburban	51%	41%	5%	3%	0%	100%
There are green areas for relaxing	Urban	16%	30%	35%	16%	3%	100%
	Suburban	65%	30%	5%	0%	0%	100%

The respondents rate the environmental indicators of their areas on a Likert scale. The respondents of both localities were aware of environmental pollution. The air and water pollution was less in the suburban locality, it also has parks and green area facilities for residents to relax and walk

Table 3. Respondents' Opinion about Environment & Health

Respondents' Self-Reported Health Assessment	Group	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Do you think the cause of Flu is Polluted air in this area	Urban	37%	30%	30%	5%	0%
	Suburban	22%	27%	24%	24%	3%
Do you think the cause of Respiratory diseases is air pollution in this area	Urban	49%	30%	14%	8%	0%
	Suburban	19%	22%	30%	22%	8%
Do you think the cause of digestive tract diseases is water pollution in this area	Urban	35%	30%	30%	5%	0%
	Suburban	5%	27%	16%	35%	16%
Do you use mineral water for drinking	Urban	46%	22%	19%	14%	0%
	Suburban	24%	24%	19%	24%	8%
Do you think the cause of diarrhea is tap water in this area	Urban	32%	22%	32%	8%	5%
	Suburban	8%	14%	22%	43%	14%
Are you affected by noise pollution in this area	Urban	19%	24%	41%	16%	0%
	Suburban	0%	16%	11%	37%	35%
Do you believe the cause of cancer is Pollution	Urban	24%	16%	30%	27%	3%
	Suburban	8%	11%	35%	27%	16%
I would willingly live in another area	Urban	24%	11%	35%	22%	8%
	Suburban	3%	8%	16%	35%	37%

The above table is showing residents' opinions about the impact of the environment on their health. The respondents living in urban areas believed that flu and respiratory tract diseases are caused by poor air quality. They reported that diarrhea is caused by contaminated drinking water although most of them prefer water purifiers and mineral water for drinking. The urban area has heavy traffic which causes noise pollution.

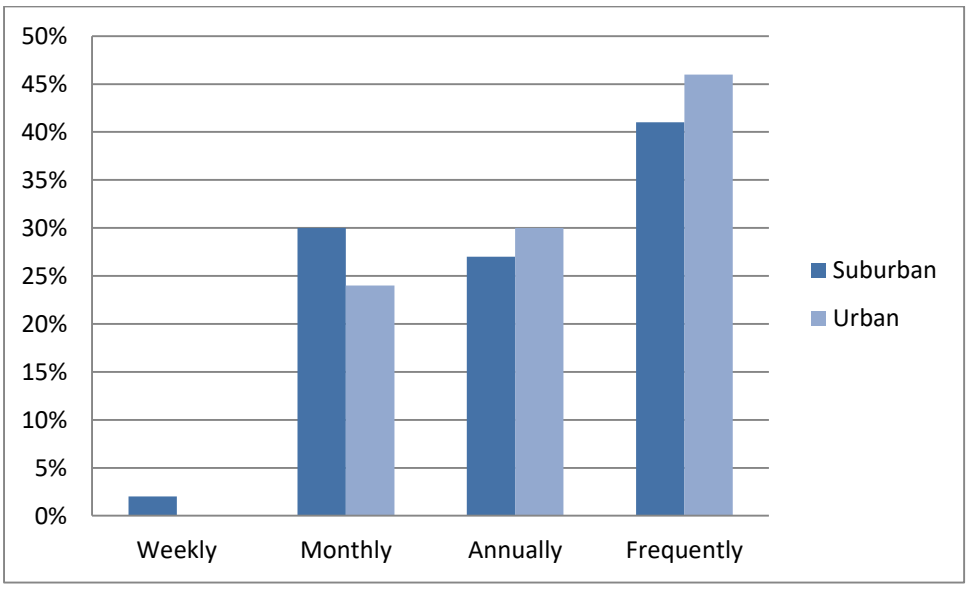

Figure 2. Percentage of urban and suburban residents effected from flu.
The above figure is showing the prevalence of flu in the urban and suburban area. The respondents experience flu very often in both areas.

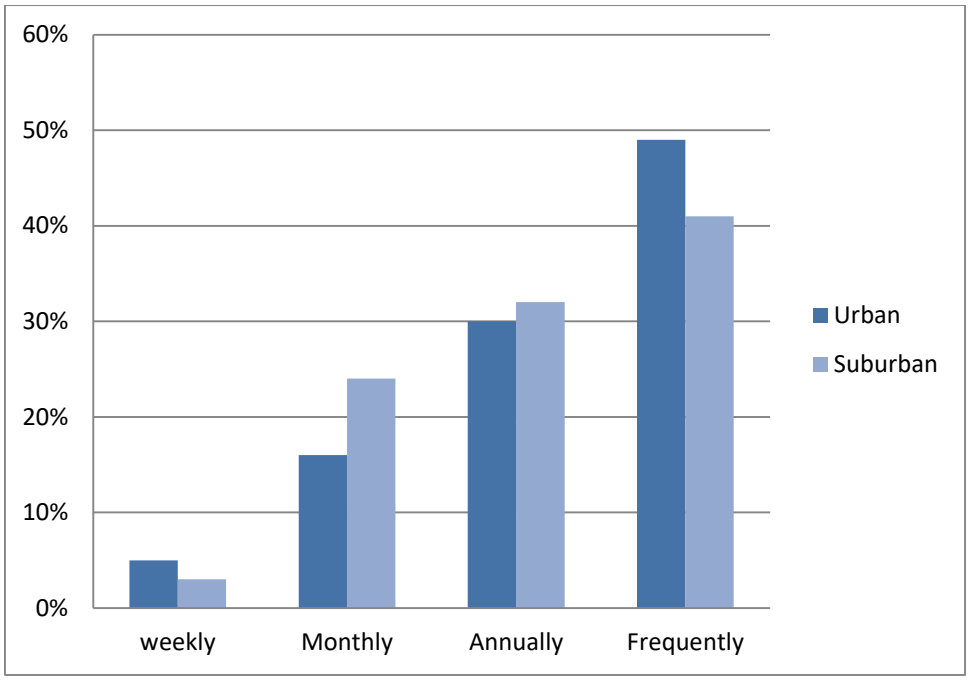

Figure 3. Percentage of urban and suburban residents effected from Diarrhoea

This figure is showing that residents of the urban area are affected more frequently by diarrhoea as compared to the suburban area.

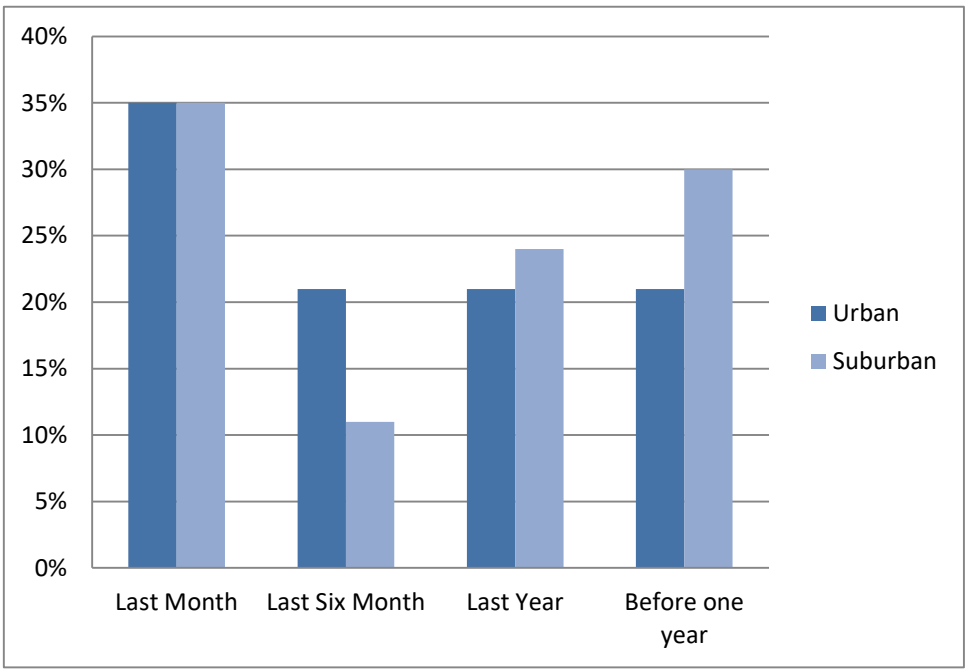

Figure 4. Percentage of respondents' antibiotic intake during one year.

The above figure is indicating respondents' antibiotic intake, 35 % of respondents of both the areas reported that they took antibiotics last month. In an urban area, only 21 % respondent had it in last year, all other use it before one year or in the last six months. Although residents of the suburban locality also had antibiotic intake high that can be because of Smog during (November & December).

The above table is showing that there is a significant positive correlation between these two variables. Environment and health are directly correlated in the current study, however, the Pearson correlation value is weak i.e. .272* to improve the health statuses of the residents' we need to work more on the environment.

Table 4. Level of Variance in Environment and Health of Urban & Suburban Areas.

One Way ANOVA						
		Sum of Squares	**df**	**Mean Square**	***F***	**Sig.**
Environment	Between Groups	320.486	1	320.486	7.382	.003
	Within Groups	3126.054	72	43.417		
	Total	3446.541	73			
Health	Between Groups	648.122	1	648.122	22.981	.000
	Within Groups	2030.541	72	28.202		
	Total	2678.662	73			

The table is generated to study the level of variance in both areas i.e environment and health status. The results showed a significant i.e. p <0.05 difference in environment and health of both areas.

Table 5. Correlation Between Health and Environment.

		Environment	**Health**
Environment	Pearson Correlation	1	.272*
	Sig. (2-tailed)		.019
	N	74	74
Health	Pearson Correlation	.272*	1
	Sig. (2-tailed)	.019	
	N	74	74

* Correlation is significant at the 0.05 level (2-tailed).

DISCUSSION

The above research was conducted in two localities of Lahore, situated in the urban and suburban areas. The findings of this research indicate that residents of urban areas consider their environment more polluted as compared to suburban areas. They reported that the cause of diseases like flu, respiratory tract and diarrhea are air and water pollution. This research support and validate previous researches (Lee & Maheswaran, 2011) about urban environment relationship with residents mental and physical health.

Table 2 is showing that people from both areas are well aware of environmental pollution. They reported that in suburban locality environment is less polluted. Streets are cleaned regularly; there is less noise pollution because of less traffic flow. The air is clean because of the greenery.

In table 3 the residents of the urban area agreed that flu, respiratory diseases, diarrhea are an outcome of a polluted environment. Most of them use mineral water or water purifier at home. These findings help to achieve the first objective of the study that is the level of variance in the environment of urban and suburban areas. It also proves the first hypotheses correct "H1 People living in suburban areas consider their environment healthier than urban areas"

The figures from 2 to 3 are showing the health status of respondents in both areas. The prevalence of flu and diarrhea is higher in urban areas than in suburban areas. But these results showed that residents of both areas are experiencing these diseases frequently and at the same time use of antibiotics is high in both areas; these findings need to be investigated further. There may be some other reasons for it like low immunity, smog and lifestyle etc.

Table 5 is indicating that the environment of the area and the health of residents are correlated. Those who have a clean and green environment are healthier than those who lived in polluted areas. These

findings support the H2 of the study i.e

"The environment of any area is correlated with the health statuses of residents of that area".

These results are aligned with the findings of (Künzli et al., 2000) which highlighted that people who lived in the thickly populated areas have many respiratory diseases.

RECOMMENDATIONS & LIMITATIONS

This study only consists of residents of two towns of Lahore. It is recommended to future researchers to compare the health status of residents of different cities. It will highlight the difference in environmental conditions.

The other factors affecting respondents' health need to be investigated such as smog, immunity levels, diet, and type of water being consumed (either mineral, tap or bottled).

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