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A PEOPLE'S PERCEPTION STUDY

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## Research Article

### SPATIAL DIMENSIONS OF QUALITY OF LIFE IN ARIYALUR, TAMIL NADU: A PEOPLE'S PERCEPTION STUDY

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#### ABSTRACT

Quality of Human life depends on the physical and psychological health or welfare of an individual or a society. Health and welfare in turn, depend on the degree to which a person's or a society's respective environments satisfy their needs; needs vary substantially by culture, age, sex, season, climate, education and income. Some must be satisfied before others are felt. It is often difficult to distinguish between "needs" and "wants" and lack of information and understanding often undo efforts to improve one's quality of life. If the allotment of resources required satisfying any of their perceived needs is not sufficient or, though sufficient is placed in jeopardy, that society will believe that its quality of life is threatened and will fight to save or restore it. Each environment is a system, which overlaps, influences, and is influenced by other systems. They resemble ecosystems (or are at least significant parts of ecosystems) in that they are units of space where biotic and physical components and processes interact to develop patterns of energy and material flow and cycling.

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#### INTRODUCTION

The transformation of the environment is the major factor modifying the relationships of all the possible stimuli with which man has to contend in order to survive. Any discussion of disease as an alteration of living cells or tissues, which jeopardizes their survival in the environment, must be based upon the global system of what is termed as environmental stimuli and man's adjustment to these stimuli. The data concerning the relationships between the malaria parasite, its two hosts, man and mosquito, and the environment in which these hosts live together illustrate clearly the three aspects of environmental stimuli physical, biological, and cultural which modify the dominance of this parasite and any other of the vast number of stimuli with which man has to contend. There are many gaps in our knowledge about the nature of these three factors and their intricate interrelationships with changing disease dominance. In the diseases of man, the cultural factor is crucial, since cultural traits either bring stimulus or host together or erect barriers to keep them apart.

##### Profile of the Study Area

Ariyalur is located centrally in the state of Tamilnadu. The town lies between 74° 05' to 74° 10' North and 11° 05' to 11°

09' East. The districts of Cuddalore, Thanjavur, Tiruchirappalli and Peramballur in the clockwise direction surround it. There are three important towns in the district. Ariyalur, Udayarpalayam and Jayankondam and they are categorized under selection grade town panchayats. The present study area is Ariyalur town which is spread over an area of 7.62 square kilometers and further subdivided into 18 wards for administrative reasons. The present study has the following objectives:

##### Objectives

1. To investigate the peoples' perception about the environmental conditions in which they create/ live and impact on their health.
2. To assess the ecological conditions through sample survey methods.

#### MATERIALS AND METHODS

To study the peoples' perception and attitudes towards the environment in which they live, a primary schedule has been prepared with 50 related questions were designed to measure the attitude and it was distributed among 386 samples which are spread over in 18 wards which is 2 per cent of sample population and it varied depending on the individual population

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of the ward. The sampling method in the study area was the random sample method based on the basic assumption that in general the environmental condition is uniformly bad in shape and the field investigation method before the collection of primary data was undertaken. The questions were directly related to measure the parameters of the environmental quality of the life and also to correlate with the healthy city indicator approach. The questions include apart from the name of respondent, age, sex, number of dependents, socio-economic characters, housing type, persons living with the respondent, living area (in square feet), details about the waste disposal site distance, source and quantity of wastes per week, perception about the wastes, common health problems, types of health services sought, environmental problem arising out of waste disposal, respondents' attitude towards the unhygienic, water logging, disease prone, wet land, pig and cattle nuisance, family details as for as the health care is concerned and so on.

**Dimensions of Quality of Life in Ariyalur Town**

The primary survey with a sample population of 386 was carried out in Ariyalur town as per the ward wise (Table1) and their quality of life was physically verified and their attitudes about the environment have been recorded individually. The following are the variable description to measure the quality of environment with reference to the healthy city indicator approach.

**Table1** Sample Distribution

| Ward No | Total Population | Samples |
|---------|------------------|---------|
| 1       | 993              | 20      |
| 2       | 1946             | 39      |
| 3       | 731              | 15      |
| 4       | 1476             | 30      |
| 5       | 4230             | Nil     |
| 6       | 900              | 19      |
| 7       | 2115             | 34      |
| 8       | 3265             | Nil     |
| 9       | 2031             | 42      |
| 10      | 2137             | 44      |
| 11      | 971              | Nil     |
| 12      | 1297             | 26      |
| 13      | 1100             | 22      |
| 14      | 1475             | 30      |
| 15      | 924              | 19      |
| 16      | 796              | 16      |
| 17      | 896              | 19      |
| 18      | 544              | 11      |

**Table 2** Variable Description

- V1 Educational level
- V2 Income/monthly (actual figures)
- V3 Number of persons in the family (actual numbers)
- V4 Male / Female
- V5 Age of the head
- V6 Housing
- V7 Living area (in square feet)
- V8 Number of persons living with you (actual number)
- V9 Waste disposal: where do they dispose their waste
- V10 Location of dumping spots (in meter)
- V11 Source of quantity (approximately in grams or kg)
- V12 How do you feel solid waste problem in general?
- V13 Efficiently perception of the municipal scavenger while cleaning the streets and

- disposal collection?
- V14 Types of health service used
- V15 Mosquito nuisance
- V16 Files nuisance
- V17 Live stock nuisance
- V18 Rodent /birds/ dogs
- V19 Odor nuisance
- V20 Making the surrounding ugly
- V21 Crowded
- V22 Hygienic
- V23 Airy
- V24 Dirty
- V25 Water logging
- V26 Dusty
- V27 Cow dang menace
- V28 Filthy
- V29 Disease prone
- V30 Mosquito nuisance
- V31 Live stock nuisance
- V32 Pig nuisance
- V33 Dog /stray dog nuisance
- V34 Rat menace
- V35 Wet land nearby
- V36 Bush nearby
- V37 Low-lying area and affects during rainy seasons
- V38 Cockroach menace
- V39 Children: Birth weight (in kgm)
- V40 Actual distance of health care centre
- V41 first birth and age of the women at the time of delivery
- V42 Stagnant wastewater nearby
- V43 Wastewater environment
- V44 Drinking water source
- V45 Do you use mosquito net in your home to protect from mosquito bite
- V46 Do you use any other methods like mosquito coil, mosquito repellent (coil type)
- V47 Out door work regularly
- V48 Perception about the noise pollution
- V49 Air pollution awareness
- V50 How is your topography during rainy seasons?

**Factor Analytic Model**

To reduce the dimensions (386 \* 50) of the variables Factor Analysis was performed using the SPSS package. The first stage of factor analysis requires product movement correlation co-efficient as basic units as basic inputs. At this level, the alternatives are between using information measuring correlations among different variables for a group of observations and taking a matrix of correlation co-efficient measuring the relationship between a set of individuals. The second stage is to explore the possibilities of data reduction by constructing a new set of variables based on the inter-relationships in the correlation matrix. In this approach, new variables are defined as mathematical transformation of the original data. In the model, the assumption is that the observed correlations are largely the result of some underlying regularity in the basic data. It assumes that the original variable is influenced by various determinants with parts shared by other variables, known as the common variance and unique variance. Common variance is part of its pattern and is related to other variables in the system and its unique variance, which is the

residual from that of multiple relations of each of the variables with mutually uncorrelated underlying factors.

The mode of analysis that has been adopted here is the R-mode, which uses inter-correlations in the construction of the factor structure. The major concern in factor analysis is to define the principle axes matrix for a number of variables. In this context, the axes are defined in n-dimensional space and the eigenvectors define principal axes and represent new variables. The relationship between each variable with the factor can be calculated by dividing each variable total calculation by the square root of the total sum of the correlations. These values are known as loadings and they represent the correlations between the original variable and the new factor. As such, they can be treated as correlation co-efficient and therefore the square of each value is the proportion of the variance in the individual variable that is associated with the factor. Taken together, the variance accounted for by the factor is referred to as the eigenvalues. The term communality represents the proportion of variance accounted for by the common factors. The loadings represent the correlation between the original variables and the new factor.

With the loadings, it is possible to determine which variable 'load' or relate together on the new factor. Rotation of factors aims at simplifying the factor matrix by separating out significant cluster of variables, without altering their relative positions. At the end of the analysis, the factor scores represent estimates of contribution of various factors to each original observations and it can be used to measure the nature and levels of health care as reported in the study area. In this analysis the positive and negative signs would indicate the good and inadequate level of health care, from the user schedule.

From the Factor Analysis, among the 20 factors the most important and dominant 10 factors have been taken for analytical interpretation and to find the different levels of awareness of health care among the tribes were graphically represented. The analysis reveals the most dominating factors, which conditions people's perception based attitudes in the affected places in the town.

**Table 4** Rotated Factor Structure on the Environmental Quality of Life in Ariyalur

| Variable   | Code       | F1     | F2     | F3     | F4     | F5     | F6     | Communality |
|--|------------|--------|--------|--------|--------|--------|--------|-------------|
| <b>Dimension I: Socio-economic status of the family</b>            |            |        |        |        |        |        |        |             |
| Number of persons  | V3         | 0.978  |        |        |        |        |        | 71.8        |
| Monthly income   | V2         | 0.299  |        |        |        |        |        | 79.9        |
| Level of Education   | V1         | 0.439  |        |        |        |        |        | 64.3        |
| Housing type   | V6         | 0.258  |        |        |        |        |        | 77.4        |
| Living area  | V7         | 0.169  |        |        |        |        |        | 76.3        |
| <b>Dimension II: Residential Environmental Quality</b>             |            |        |        |        |        |        |        |             |
| Septic tank/Open drainage problem                                  | V24        |        | 0.423  |        |        |        |        | 65.2        |
| Quantity of solid waste per day                                    |            |        | 0.303  |        |        |        |        | 76.3        |
| Livestock menace   | V11        |        | 0.370  |        |        |        |        | 69.1        |
| Residential cleanness/ dirty/ dusty                                | V17<br>V26 |        | 0.575  |        |        |        |        | 93.8        |
| <b>Dimension III: Quality of Life nearby</b>                       |            |        |        |        |        |        |        |             |
| Wetland nearby   | V35        |        |        | 0.425  |        |        |        | 70.6        |
| Water logging/stagnant areas                                       | V42        |        |        | 0.418  |        |        |        | 67.2        |
| Pig/ cattle menace   | V32        |        |        | 0.266  |        |        |        | 67.8        |
| Mosquito breeding source nearby                                    | V16        |        |        | 0.405  |        |        |        | 94.4        |
| <b>Dimension IV: Problem of Solid waste</b>                        |            |        |        |        |        |        |        |             |
| Perception about the solid waste sites                             | V12        |        |        |        | 0.483  |        |        | 64.9        |
| Attention of Municipal scavengers towards wastes                   | V13        |        |        |        | 0.256  |        |        | 72.8        |
| Location of dumping spots  |            |        |        |        | 0.158  |        |        | 66.8        |
| Interference of pigs in solid wastes                               | V10<br>V32 |        |        |        | 0.442  |        |        | 63.5        |
| <b>Dimension V: Perception about the Mosquito related problems</b> |            |        |        |        |        |        |        |             |
| Wetland/ marshy nearby   | V36        |        |        |        |        | 0.424  |        | 67.7        |
| Low lying area affects during rainy season                         | V37        |        |        |        |        | 0.396  |        | 79.6        |
| Unclaimed solid wastes for long time                               |            |        |        |        |        | 0.258  |        | 73.2        |
| Steps taken to protect mosquitoes                                  | V20        |        |        |        |        | 0.296  |        | 65.0        |
| Perception about the JE  | V45        |        |        |        |        | 0.478  |        | 72.0        |
|  | V29        |        |        |        |        |        |        |             |
| <b>Dimension VI: Women and child health care</b>                   |            |        |        |        |        |        |        |             |
| Women's age at the first birth of child & birth weight             | V41        |        |        |        |        |        | 0.623  | 76.9        |
| Distance to the nearest health center or GP                        | V40        |        |        |        |        |        | 0.318  | 66.9        |
| Outdoor work regularly   | V47        |        |        |        |        |        | 0.262  | 73.2        |
| Eigen values   |            | 6.438  | 3.085  | 2.481  | 2.320  | 2.102  | 2.084  |             |
| Percent of variance explained                                      |            | 12.967 | 6.170  | 4.962  | 4.640  | 4.205  | 4.168  |             |
| Cumulative percentage of variance                                  |            | 12.967 | 19.137 | 24.099 | 28.739 | 32.944 | 37.112 |             |

Source: Results of Factor Analysis using SPSS 10

### Factor Dimensions

From the Factor analysis out of the 20 factors the following first six factors have been selected for descriptive interpretation. They are:

| Dimension I   | Socio-economic status of the family            |
|---------------|--|
| Dimension II  | Residential Environmental Quality              |
| Dimension III | Quality of Life Nearby                         |
| Dimension IV  | Problem of Solid wastes                        |
| Dimension V   | Perception about the Mosquito related problems |
| Dimension VI  | Women and Child Health care                    |

#### Dimension I: Socio-economic status of the family

The first factor is the Socio-economic status of the family with an eigen value of 6.438 and it has five variables, namely Number of persons (0.978), Monthly income (0.299), Level of Education (0.439), Housing type (0.258) and Living area (0.169) and all of them are positively loaded with a contribution of 12.96 per cent. Number of persons accommodated and the living area plays a major role in determining the quality of life because the basic amenities matter. The people who are under the category of low income comes the next and they are unable to upkeep the environment due to the income constraint. Level of education is also one among the variable and if the lower the educational standards the perception about the environment by the people should also be low and they do not understand properly if the quality of environment is poor that creates a conducive atmosphere for many vector born disease.

#### Dimension II: Residential Environmental Quality

The second dimension is the Residential Environmental Quality with an eigen value of 3.085 with four variables are loaded in this category. They are Septic tank/ open drainage problem (0.423), Quantity of solid waste per day (0.303), Livestock menace (0.370) and Residential cleanness/ dirty/ dusty (0.575) with a contribution of 6.17. It is evident in the field investigation at Ariyalur town that majority of the septic tank is let open to drain in the open drainage and due to large scale pig population they make the environment uglier and creates an environment to grow bacterial organisms. Solid wastes are disposed on the roads with out any proper care by the administration and some time they are disposed on the open drainage and that is the reason majority of the open drainage is blocked and the water flows on the road side as well in front of the residential areas. The majority of the residential areas in the centre of the town is having cattle sheds either at the backyard or adjacent to the residential house. The housing pattern in the town is mixed, that is some residences are with concrete roof, some are with thatched sheds and some are very poor conditions with adverse environmental quality. In the center of the town more than 90 per cent of the town us dirty/ dusty and this has been proved in the analysis.

#### Dimension III: Quality of Life Nearby

The third factor is the quality of environment in the sample population surrounding which has the Eigen value of 2.481 with the four variables. They are: Wet land nearby (0.425), Water logging/ stagnant areas (0.418), Pig/ cattle menace (0.266) and Mosquito breeding source nearby (0.405) with a contribution of 4.96 per cent. It is evident from the analysis that the region has many mining centers nearby and during the

rainy season these low lying areas are filled with water and due to seepage most of the places are with wet soil. Because of this reason the low lying areas are becomes the stagnant waste water areas that allows the mosquitoes to breed and search for 'blood meal'. This environment is further deteriorated with the growth of pig and cattle's, which supplements the conducive environment for the vectors in this region.

#### Dimension IV: Problem of Solid waste

The fourth factor is the major problem of solid wastes in which the people as well the administrator do not take care to move to waste land areas and this has the eigen value of 2.320 with four major variables. They are: Perception about the solid waste sites (0.483), attention of municipal scavengers towards wastes (0.256), Location of dumping spots (0.158) and Interference of pigs in solid wastes (0.442) with a contribution of 4.64 per cent. These indicators show that the perception about the sample population is very poor about the disposal, accumulation and also the major facing problem by themselves during rainy seasons. Among the respondents majority of them have indicated that the town panchayat is not taking care to move the accumulated wastes to some other place where there is no human intervention. Location of dumping spots is also not in specified locations and the people in this region uses wherever they find place nearby by and making the environment ugly. The stray pigs get involved with the solid wastes and stagnant water areas in all the seasons makes the region as a disease prone one.

#### Dimension V: Perception about the Mosquito related problem

The fifth dimension is the Perception about mosquito related problems in the study area and it has eigen value of 2.102 with a contribution of 4.20 per cent. The loaded variables are Wetland/ Marshy nearby (0.424), Low-lying area affects during rainy season (0.396), unclaimed solid waste for long time (0.258), steps taken to protect mosquito (0.296) and perception about the Japanese Encephalitis (0.478). These variables reflect the perceptual experiences of the respondents about the various mosquito related problems in the town. They are particularly the marshy environment (bushes nearby houses) low lying areas during rainy season, unclaimed solid wastes for a long time that was disturbed by the stray pigs. Majority of the respondents are not aware of the protection from the mosquito bite and its aftermath problems and majority of them are not bothered to protect the mosquitoes by way of self contained methods (by using nets, mosquito coils and so on). The perception about the Japanese Encephalitis (Brain fever) that affects the children under the age of 6 years are very common in this region and it is interesting to know from the respondents that they are unaware about the genesis of the disease environment.

#### Dimension VI: Women and Child Health care

The final dimension is the quality of life of women and child health care in this town. It has an Eigen value of 2.084 with three major variables is loaded with a contribution of 4.168. The variable described are Women's age at the first birth of child and birth weight (0.623), Distance to the nearest health center or GP (0.318) and outdoors work regularly (0.262). The first variable indicate that the status of women and child health among the sample population. Next is the distance traveled to

reach the health care though it is high the 30 GPs and specialists are taking care of the health care of the town. The women folk in this region are normally goes out for outdoor works for their day-to-day life. Majority of the women and child population are deficient in nutrition status. This is also one among the factors that affect the vector borne diseases in this part of the region.

### Conclusion

From the above analysis the following conclusions were made based on the six major factors as per the WHO Healthy city indicator approach and these factors might be responsible for the poor quality of life in the town.

1. Total Number of persons accommodated and the living area plays a major role in determining the quality of life because the basic amenities matter. The people who are under the category of low income comes the next and they are unable to upkeep the environment due to the income constraint. Level of education is also one among the variable and if the lower the educational standards the perception about the environment by the people should also be low and they do not understand properly if the quality of environment is poor that creates a conducive atmosphere for many vector born disease.
2. In Ariyalur town majority of the septic tank is let open to drain in the open drainage and due to large scale pig population they make the environment uglier and creates an environment to grow bacterial organisms. Solid wastes are disposed on the roads with out any proper care by the administration and some time they are disposed on the open drainage and that is the reason majority of the open drainage is blocked and the water flows on the road side as well in front of the residential areas. The majority of the residential areas in the centre of the town is having cattle sheds either at the backyard or adjacent to the residential house. The housing pattern in the town is mixed, that is some residences are with concrete roof, some are with thatched sheds and some are very poor conditions with adverse environmental quality. In the center of the town more than 90 per cent of the town is dirty/ dusty and this has been proved in the analysis.
3. During rainy season particularly the abandoned mining centers that are present in the low lying areas are filled with water and due to seepage most of the places are with wet soil. Because of this reason the low-lying areas are becomes the stagnant wastewater areas that allows the mosquitoes to breed and search for 'blood meal'. This environment is further deteriorated with the growth of pig and cattle's, which supplements the conducive environment for the vectors in this region.
4. Perception about the sample population is very poor about the disposal, accumulation and also the major facing problem by themselves during rainy seasons. Among the respondents majority of them have indicated that the town panchayat is not taking care to move the accumulated wastes to some other place where there is no human intervention. Location of

dumping spots is also not in specified locations and the people in this region uses wherever they find place nearby by and making the environment ugly. The stray pigs get involved with the solid wastes and stagnant water areas in all the seasons makes the region as a disease prone one.

5. Perceptual experiences of the respondents about the various mosquito related problems in the town are particularly in the marshy environment (bushes nearby houses) low lying areas during rainy season, unclaimed solid wastes for a long time that was disturbed by the stray pigs. Majority of the respondents are not aware of the protection from the mosquito bite and its aftermath problems and majority of them are not bothered to protect the mosquitoes by way of self-contained methods (by using nets, mosquito coils and so on). The perception about the Japanese Encephalitis (Brain fever) that affects the children under the age of 6 years are very common in this region and it is interesting to know from the respondents that they are unaware about the genesis of the disease environment.
6. The distance traveled to reach the health care though it is high the 30 GPs and specialists are taking care of the health care of the town. The women folk in this region are normally goes out for outdoor works for their day-to-day life. Majority of the women and child population are deficient in nutrition status. This is also one among the factors that affect the vector borne diseases in this part of the region.
7. The district administration is required to take care of the above findings while executing the other environmental related works as it is based on people's perception.

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