Scenario of Child Health Status in Thanjavur Corporation, Tamil Nadu, India

Mrs. T. Ponnyin Selvi* and Dr. S. Vadivel**

*Assistant Professor, Department of Geography, Kunthavai Naacchiyaar Govt. Arts College for Women (Autonomous), Thanjavur-613 007.
**Assistant Professor, Post Graduate and Research Department of Geography, Government Arts College (Autonomous), Kumbakonam-612 001.

Abstract:- Introduction: Children of today are citizens of tomorrow, so it is extremely important to make sure of their health status and nutritional intake. Early childhood, that is the first six years constitutes the most crucial period in life, when the basic foundations are laid for cognitive, social and emotional language, psychomotor development and cumulative lifelong learning. Children represent the future, so ensuring their healthy growth and development ought to be a prime concern of all societies. Newborns are vulnerable to malnutrition and infectious diseases, many of which can be effectively prevented or treated. Today, more than ever before, the child has become a focus for organized medical and social welfare activities. A large majority of children live in rural, tribal and urban slums. By virtue of their numbers, they are entitled to a large share of health and social services. Therefore they need special attention.

Objective: to examine the interrelationships and interdependences of socio-economic, demographic, cultural, environmental, physiological, dietary behaviour and psychological determinants of children aged 0 to 6.
Sample: Random sampling method is used for the present study. There are 51 wards, 24 children from each Wards aged between 0 to6, totally 1224 children are selected and they are the respondents for the present study.

Methodology: Factor Analysis was employed to bring out major dimensions and findings with the help of SPSS software package.

Conclusion: Seven dimensions were extracted- Physiological, Dietary behaviour, Problems of Child Healthcare, Parent's Educational Status, Parent's Economic Condition, Complexity and Infant food. These are the determining factors of child health of Thanjavur Corporation.

Key Words: *Child health status, Factor analysis, Physiological condition*

I. INTRODUCTION

Children of today are citizens of tomorrow, so it is extremely important to make sure of their health status and nutritional intake. Early childhood, that is the first six years, constitutes the most crucial period in life, when the basic foundations are laid for cognitive, social and emotional language, psychomotor development and cumulative lifelong learning. Children represent the future, so ensuring their healthy growth and development ought to be a prime concern of all societies. Newborns are vulnerable to malnutrition and infectious diseases, many of which can be effectively prevented or treated. Today, more than ever before, the child has become a focus for organized medical and social welfare activities. A large majority of children live in rural, tribal and urban slums. By virtue of their numbers, they are entitled to a large share of health and social services. Therefore they need special attention.

Over View

Health geography is the application of geographical information, perspectives, and methods to the study of health, disease, and healthcare. Initially it was referred to as Medical Geography (Andrews, 2002). Geography of health is drawing upon the work of professional geographers with an interest in health and health care service provision. Discipline of Geography is broadly defined as "the study of the earth's surface as the space within which the human population lives" (Haggett, 1990).Geographers of health have done much to emphasize the importance of relationships between health, and the places and spaces which produce and reproduce experiences of health or are constructed through policy to respond to ill-health (Jones and Moon 1993; Litva and Eyles 1995; Kearns and Moon 2002). Contemporary research includes identification of determinants of spatial inequalities in health (Graham 2000; Curtis et al. 2002, 2004; Boyle et al. 2004; Fagg et al. 2006), the importance of particular spaces and places such as neighbourhoods (Cummins and Macintyre

2002; Diez-Roux 2003; Wilson et al. 2004) or therapeutic landscapes (Andrews 2004; Gesler et al. 2004; Milligan et al. 2004; Conradson 2005; Smyth 2005); impacts of different health experiences on the construction of places (Bush et al. 2001; Smith and Easterlow 2005; Wakefield and McMullan 2005) and contextualized analyses of policy responses (Moon and Brown 2001; Atkinson 2002; Kearns and Barnett 2002).

Study Area

Thanjavur is the headquarters of the Thanjavur District. The city is an important agricultural centre located at 10.8° N and 79.15° E in the Cauvery Delta and is known as the "Rice bowl of Tamil Nadu". It is administered by an Municipal Corporation consisting of 51 wards, covering an area of 36.33 km2 (14.03 sq mi). According to 2011 census, Thanjavur Corporation had a population of 222,943 with a sex-ratio of 1,042 females for every 1,000 males, much above the national average of 929. A total of 19,860 were under the age of six, constituting 10,237 males and 9,623 females. Scheduled Castes and Scheduled Tribes accounted for 9.22 percent and 21 percent of the population respectively. The average literacy of the city was 83.14 percent, compared to the national average of 72.99 percent.World Health Organisation (WHO) definition of Health

The widely accepted definition of health is given by the World Health Organisation (1948) in the preamble to its constitution, which is as follows: "Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infinity".

Health is a state subject as per The Constitution of India within the federal set up of the nation, consisting of a central government and individual state governments. It makes every state responsible for "raising the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties".

Importance of the Present Study

India is the home of the largest number of children in the world and 29 percent constitutes children aged between 0-5 years. Children are the future pillars of our nation. National data establishes that, approximately 100 million children are in the poorest wealth quintile. One half of all the poor children belong to the Scheduled Castes and Scheduled Tribes groups and they continue to be at a significant disadvantage. In India about 1.83 million children die annually before completing their fifth birthday due to preventable causes. In India alone there are approximately 60 million children who are underweight and the prevalence is higher in rural areas compared to urban areas. The number of malnourished children in India is the highest in the world. This condition leads to underweight and this is due to low dietary in-take, excessive work and chronic infections. Major indicators related to maternal and child health shows that the situation in Tamil Nadu is considerably better than that in India as a whole. There are, however, several challenges that pose a threat to the public health system. As children are the future nation builders, ensuring their healthy growth and development ought to be a prime concern of all societies.

Health as one of the vital indicators of social well-being of the people is by and large derivative of socio-economic development of a place. The health of a child could also be understood in relation to low production, poverty, and poor health service, low income, over or under nutrition. Hence, the present study has focused to study the socio-economic, demographic, environmental, anthropometric, health care status and problems in health care. The study has also made an attempt to probe into the major dimensions.

Aim and Objectives

The aim of the present study is to evaluate the child health conditions in Thanjavur Corporation and it has the following objective:
1. To examine the socio-economic condition of children's family and
2. To analyse the interrelationships and interdependences of socio-economic, demographic, cultural, environmental, physiological, dietary behaviour and psychological determinants of children aged 0 to 6.

II. METHODOLOGY

This study is based on questionnaire survey by direct observation method. 1224 children respondents have been selected based on Random sampling procedure. The questions are related to socio-economic, cultural, demographic, anthropometric and psychological characters and also health status, health problems and healthcare utilization. The information collected through the questionnaire has been transformed into 84 selected variables and entered into SPSS for the application of statistical technique to find out the association. These variables are assumed to be the vital factor in determining the health status of children. Factor analysis was employed for the present data structure and accordingly a matrix of 1224 x 84 was subjected to dimension reduction process. 28 out of 84 variables were extracted for the interpretation purpose of the present study. So the data were reduced to 28x28 inter correlation matrix to facilitate an easy interpretation. In addition to the above, the factor loading matrix was used to explain the strength of relationship and the variance of each variable with all other variables.

III. FINDINGS AND DISCUSSIONS

The application of factor analysis for the present study is very useful in separating the major dimensions of child health conditions. Seven dimensions were extracted and contributing a total variance of 66.175 per cent. An Eigen value of 1.0 is taken as a cut-off point to determine the number of dimensions to be extracted. Correlation matrix revealed the presence of many coefficients of 0.4 and above. The Kaiser-Meyer-Oklin (KMO) value was 0.868, exceeding the recommended value of 0.6 and the Barlett's Test of Sphericity reached statistical significance (0.001), supporting the factorability of the correlation matrix. Principal components analysis revealed the presence of seven components with Eigen values exceeding 1.0.

IV. HEALTHCARE OF CHILDREN

Of the 1224 children, male and female are 47.2 percent and 52.8 percent respectively. Their parents confirmed that 83.3 percent (1020) of children are not having any health problems and remaining 16.7 percent (204) visited recently to the health centres for curative measures regarding-phlegm (5.8%), fever (5.1%), Dysentery (2.1%), running and blocking nose (1.3%) ,stomach pain, asthma and others (1.3%). They also reported that their children's weight at the time of birth was observed- very large (2.9%), larger than average (31.6%), average (52.2%), lesser than average (12.1%) and very less (0.6%). 62.5 percent of the women reported that they fed breast milk up to 12 months, 15.3 percent are up to 20 months, 16.0 percent are up to 24 months and the left over 6.2 percent are up to 36 months. Almost 99.0 percent of the children received BCG, Polio, DPT and Measles vaccinations and also intestine worm treatment from the General Hospital (56.9%), Private Hospital (29.1%), Vaccination centre (10.4%) and Mobile centre (3.6%).

Factor I: Physiological Characters Children's physiological growth is the major indicator of health of an individual child. "Physiological Characters" has emerged as the single most important factor with an Eigen value of 4.987 and the total variance of 17.809 percent (Table 1).

Factor I: Physiological Characters

Variable Number	Name of the Variable	Factor Loading
Ph 7	Child hip	0.876
Ph 6	Child chest	0.869
Ph 5	Child head circumference	0.789
Ph 4	Child height	0.782
Ph 9	Child arm (hand) length	0.766
Ph 3	Child weight	0.765
Ph 8	Child length of leg	0.754
Eigen Value: 4.987	Total Variance: 17.809	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 7 iterations.		

Table 1

Seven out of twenty eight variables are loaded on this factor. This is clearly indicating that the variables- child hip (0.876, p=0.566), child chest (0.869, p=0.573), child head circumference (0.789, p=0.508), child height (0.782, p=0.835), child arm length (0.766, p=0.789), child weight (0.765, p=0.831) and child length of leg (0.754, p=0.803) are highly correlated with children's physiological characters. These variables are having strong positive relationships with the children's age. As a result, children's age increases with the increase of children's physique. So, in Thanjavur Corporation children are not having any problem in their growths and no registration of stunted growth.

Factor II: Dietary Behaviour and Child Growths Intake of nutritious food and dietary behaviour are the vital one for the child growths. The factor "Dietary Behaviour and Child Growths" emerge as the second most essential factor, nine out of twenty eight variables with an Eigen value of 3.493 and the total variance of 12.474 percent (Table 2). Among them, six variables have been identified with strong positive relationships - mutton (0.796), chicken (0.791), egg (0.678), fast food (0.569), fruits (0.505) and green leaf (0.481). Children's parents conveyed that the types of food given to the children are Mutton: daily (0.2%), weekly (35.7%), sometimes (16.8%) and not at all (47.2%); chicken: daily (1.1%), weekly (45.1%), sometimes (15.0%) and not at all (38.9%); egg: daily (18.6%), weekly (48.7%), sometimes (9.2%) and not at all (23.5%); fast food: : daily (0.7%), weekly (4.2%), sometimes (30.5%) and not at all (64.7%); fruits: daily (25.2%), weekly (27.0%), sometimes (24.0%) and not at all (23.9%) and green leaf: daily (5.8%), weekly (60.4%), sometimes (10.9%) and not at all (22.9%).

Factor II: Dietary Behaviour and Child Growths

Variable Number	Name of the Variable	Factor Loading
Ph 4	Child height	-0.460

Ph 3	Child weight	-0.419
Ph 8	Child length of leg	-0.427
Cf 10	Mutton	0.796
Cf 9	Chicken	0.791
Cf 8	Egg	0.678
Cf 11	Fast food	0.569
Cf 7	Fruits	0.505
Cf 5	Green leaf	0.481
Eigen Value: 3.493	Total Variance: 12.474	

Table 2

This undoubtedly explains that the children are having good dietary behaviour and it has paved the way for proper child growths. In contrast, variables- child height (-0.460), child weight (-0.419) and child length of leg (-0.427) are having inverse relationships with dietary behaviour because the intake of food is determined by the age of children. The infants cannot take this kind of food and it highly depends on child growths (height, weight and length of leg). Therefore the child growths are mainly controlled by the intake of nutritious food. Arguing in other way, the child growths are not having direct relationship with their dietary behaviour because children aged 0 to 2 years depends on breast feeding, liquid food/infant food and semi solid food. After crossing this age the children are able to have solid food. This study clearly shows that the children in Thanjavur Corporation are having good dietary practises as well as proper physical growth.

Factor III: Inconvenience in Childcare

Childcare is very complicated and has a crucial role to play. The third factor "Inconvenience in Childcare" appeared with an Eigen value of 2.751 and the total variance of 9.826 percent (Table 3). Five variables are loaded significantly with positive relationships namely- accompanying person (0.811), taking to hospital for treatment (0.800), giving pills and syrup (0.679), distance (0.669) and getting permission (0.562). For carrying children to receive health care a person should accompany the mother, it is very difficult to give pills and syrup to the children, distance is another problem to reach the hospital on time and mothers who works in private/public/government sectors finds it difficult to get permission. In contrast, the parents revealed that a person accompanying with mother/child is a big problem (6.3%), small problem (1.5%) and no problem (92.2%); taking to hospital for treatment is big problem (8.2%), small problem (1.6%) and no problem (90.3%); giving pills and syrup to the children is a big problem (3.1%), small problem (1.6%) and no problem (95.3%); distance travelled to reach the health centre is big problem (7.0%), small problem (1.2%) and no problem (91.7%) and getting permission from the office to take care of the child is big problem (4.5%), small problem (1.6%) and no problem (93.9%). Therefore, this is evidently demonstrating the fact that majority of the mother/parents are more caring and gives immediate medication and they did not find any inconvenience to look after their child in Thanjavur Corporation.

Factor III: Inconvenience in Child care

Variable Number	Name of the Variable	Factor Loading
Chp 18	Accompanying person	0.811
Chp 15	Taking to hospital for treatment	0.800
Chp 19	Giving pills and syrup	0.679
Chp 17	Distance	0.669
Chp 16	Getting permission	0.562
Eigen Value: 2.751	Total Variance: 9.826	

Table 3

Factor IV: Socio-Economic Characters

Socioeconomic status affects the overall human functions, including development across the life span, physical and mental health. Variance in socioeconomic status, including disparities in the distribution of wealth, income, and access to resources, affects everyone. The fourth factor "Socio-Economic Characters"is derived with an Eigen value of 2.477 and the total variance of 8.845 percent (Table 4). Four out of twenty eight variables are positively loaded on this factor: father's educational status (0.857, p=0.614), mother's educational status (0.814, p=0.524) and family's annual income (0.812). These variables are having positive relationship with socio-economic characters. This is plainly representing the increased educational status of parents with increased annual income of the family. However, the variable child/infant food (-0.488) has an inverse interaction with those variables. Because, the increase in socio-economic status of a family shows the decrease of giving child infant food (packed/container/junk food). The respondent's father's educational status illustrates that- illiterate (3.7%), elementary (6.3%), middle school (10.7%), high school (24.6%), higher secondary/diploma (23.5%), bachelor degree (14.1%) and master degree (17.2%). The respondent's mother's educational status illustrates that - illiterate (4.7%), elementary (6.6%), middle school (13.8%), high school

(28.1%), higher secondary/diploma (16.9%), bachelor degree (13.6%) and master degree (16.3%). Their annual family income status reveals that <100,000 (41.4%), 100,001 to 200,000 (19.0%), 200,001 to 300,000 (22.4%), 300,001 to 400,000 (12.3%), 400,001 to 500,001 (3.7%) and >500,001 (1.3%). As a result, the children's health conditions and socio-economic conditions are good in Thanjavur Corporation.

Factor IV: Socio-Economic Characters

Variable Number	Name of the Variable	Factor Loading
Se 15	Father's Educational Qualifications	0.857
Se 16	Mother's Education	0.814
Se 12	Family Annual Income	0.812
Cf 1	Child/infant food	-0.488
Eigen Value: 2.477	Total Variance: 8.845	

Table 4

Factor V: Leisure Time to Play with the Child

Parents are role models for their children and they show heed; share love and affection and adore their children. So, parents require time to take part in the intellectual development of their children. The fifth factor "Leisure time to play with the child" has come out with an Eigen value of 1.871 and the total variance of 6.683 percent (Table 5). One variable- getting permission (-0.487) has an inverse relationship with the variables- time for rest (0.891) and time to play with the child (0.874). This is clearly indicating the fact that the increase in time for rest and time to play with the child goes on decreasing with getting permission and vice versa. 96.4 percent of the parents expressed that they have enough time to play with their child. Similarly, 94.7 percent of the parents working in the private/public sector also have sufficient time for taking rest. In contrast, 4.5 percent and 1.6 percent of the parents conveyed that getting permission is a big problem and small problem respectively. So, parents are having ample time to play with their children with few exceptions.

Factor V: Leisure Time to Play with the Child

Variable Number	Name of the Variable	Factor Loading
Chp 16	Getting permission	-0.487
Cf 16	Time for rest	0.891
Cf 15	Time to play with child	0.874
Eigen Value: 1.871	Total Variance: 6.683	

Table 5

Factor VI: Complexity

Child health care is multifaceted, sensitive and emotional possessions for parents. Thus, the sixth factor Complexity"has emerged with an Eigen value of 1.483 and the total variance of 5.296 percent (Table 6).

Factor VI: Complexity

Variable Number	Name of the Variable	Factor Loading
Chp 13	Difficult to take care	0.875
Chp 12	Spending more money	0.768
Eigen Value: 1.483	Total Variance: 5.296	Eigen Value: 1.483

Table 6

The two variables difficult to take care (0.875) and spending more money' (0.768) are positively loaded on this factor. This is visibly representing the truth that there is no complexity to take care as well as spending money for their children. 97.8 percent and 94.3 percent of the parents conveyed that they don't face any difficulty in parental care and reported no monetary problem.

Factor VII: Infant Food

The last and the seventh factor is "Infant Food" with an Eigen value of 1.468 and the total variance of 5.242 percent (Table 7). The variables- Green Leaf (0.453), Flavoured Food (0.694) and Cereal Food (0.625) are positively loaded on this factor. The parents revealed that they have been giving green leaf food to their children- daily (5.8%), weekly (60.4%), sometimes (10.9%) and not at all (22.9%); flavoured food has been given -daily (15.6%), weekly (7.8%), sometimes (7.9%) and not at all (68.6%) and cereal food supplement - daily (24.2%), weekly (45.0%), sometimes (10.6%) and not at all (20.2%). So, infants are provided with healthy food.

Factor VII: Infant Food

Variable Number	Name of the Variable	Factor Loading
Cf 5	Green leaf	0.453
Cf 6	Flavoured food	0.694
Cf 4	Cereal food	0.625
Eigen Value: 1.468	Total Variance: 5.242	

Table 7

V.   CONCLUSION

This present study has proven that the child health status of Thanjavur Corporation and socio-economic conditions are satisfactory. Almost all children are vaccinated with BCG, Polio, DPT and Measles vaccinations. The children are enjoying good dietary practises and it leads to proper physical growth. Parents do not find any inconvenience in bringing up the children and they have ample time to play with them.

REFERENCES:

[1] Andrews, G. (2002). Towards a more place-sensitive nursing research: An invitation to medical and health geography. Nursing Inquiry 9: 221–38.

[2] Andrews, G. (2004). (Re) thinking the dynamics between healthcare and place: therapeutic geographies in treatment and care practices. Area 36 (3), 307–18.

[3] Atkinson, S. (2002). Political cultures, health systems and health policy. Social Science and Medicine 55 (1), 113–24.

[4] Boyle, P.J, et al. (2004). The Geography of Health Inequalities in the Developed World: Views from Britain and North America. Ashgate, London.

[5] Bush, J. et al. (2001). 'Even the birds round here cough': stigma, air pollution and health in Teeside. Health and Place 7, 47–56.

[6] Conradson, D. (2005). Landscape, care and the relational self: therapeutic encounters in rural England. Health and Place 11, 337–48.

[7] Cummins, S. and Macintyre, S. (2000). A systematic study of an urban foods cape: the price and availability of food in Greater Glasgow. Urban Studies 39, 2115–30.

[8] Curtis, S.E. et al. (2002). Is urban regeneration good for health? Perceptions and theories of the health impacts of urban change. Environment and Planning C: Government and Policy 20, 517–34.

[9] Curtis, S.E. et al. (2004). Area effects on health variation over the life course: analysis of the longitudinal study sample in England using new data on area of residence in childhood. Social Science and Medicine 58, 57–74.

[10] Diez-Roux, A.V. (2003). The examination of neighbourhood effects on health: conceptual and methodological issues related to the presence of multiple levels of organisation. In: Kawachi I, Berkman LF, eds. Neighbourhoods and Health. Oxford University Press, Oxford, pp. 45–64.

[11] Fagg, J. et al. (2006). Psychological distress among adolescents, and its relationship to individual, family and area characteristics in East London. Social Science and Medicine 63, 636–48.

[12] Gesler W, et al. (2004). Therapy by design: evaluating the UK hospital building program. Health and Place 10, 117–28.

[13] Graham H, ed (2000). Understanding Health Inequalities. Open University Press, Maidenhead.

[14] Haggett, P. (1990). The Geographer's Art. Blackwells: Oxford.

[15] Jones, K. and Moon, G. (1993): Medical geography: taking space seriously. Progress in Human Geography 17, 515–24.

[16] Kearns, R. Barnett, R. (2002). Happy meals in the Starship Enterprise: interpreting a moral geography of health care consumption. Health and Place 6, 81–93.

[17] Kearns, R. and Moon, G. (2002). From medical to health geography: novelty, place and theory after a decade of change. Progress in Human Geography 26 (5), 605–25.

[18] Litva, A. and Eyles, J. (1995). Coming out: exposing social theory in medical geography. Health and Place 1, 5–14.

[19] Milligan, C. et al. (2004). Cultivating health: therapeutic landscapes and older people in northern England. Social Science and Medicine 58, 1781–93.

[20] Moon, G and Brown, T. (2001). Closing Barts: community and resistance in contemporary UK hospital policy. Environment and Planning D: Society and Space 19 (1), 43–59.

[21] Smith, S.J and Easterlow, D. (2005). The strange geography of health inequalities. Transactions of the Institute of British Geographers 30, 173–90.

[22] Smyth, F. (2005). Medical geography: therapeutic places, spaces and networks. Progress in Human Geography 29 (4), 488–95.

[23] Wakefield, S and McMullan, C. (2005). Healing in places of decline: (re)imagining everyday landscapes in Hamilton, Ontario. Health and Place 11, 299–312.