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**A study on environmental sanitation, and personal hygiene among the slum area in Solapur city, Maharashtra**

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**ABSTRACT**

*Environmental sanitation comprises disposal and treatment of human excreta, solid waste and wastewater, control of disease vectors, and provision of washing facilities for personal and domestic hygiene. This paper analyzes the availability of water and sanitation in Solapur slum with the help of validated questionnaire for data collection. The result of study indicates that environmental sanitation through inhabitants is of an average degree, but not very much satisfactory from the hygiene point of view. Lack of water and poor sanitation is one of the many challenges faced by poor urban populations. The conventional approach to environmental sanitation is characterized by a linear waste management system; where organic materials are create pollution problems in receiving waters thereby posing health risks to the local populace. The study finds a relationship between the socioeconomic status and the availability of water and sanitation.*

**Key words:** Environmental Sanitation; Solapur slum area; Water supply, water born diseases.

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**INTRODUCTION**

A slum is a compact area with 300 residents or which had 60-70% of the households having poorly congested rooms with inadequate infrastructure, lack of proper sanitation and drinking water facilities (Slum Survey, 2001). Slum includes dwelling which on account of overcrowding, and lack of ventilation is detrimental to the safety, health and social morale (Census of India, 1961). India is a developing economy and slum population is growing at an alarming rate. It is now reported that one third of the total slum population lives in cities like Kanpur, Mumbai, Kolkata, Nagpur, Chennai, Delhi, Bangalore, Hyderabad etc. In India, cities with million plus population nearly have one fourth of their population living in slums (Census, 2011). Slums have become an inevitable part of the major Indian metropolitan cities. Water is one of the most important natural resources and is the essence of life on earth. The availability of safe water and adequate sanitation is critical not merely for health reasons, but also for economic development (WHO and UNICEF, 2006). Approximately 1.2 billion people do not have access to safe water and 2.6 billion lack basic sanitation (Cairncross et al., 2003).

Urban population growth has implications for the provision of services and the state of the environment. For example, poor services, including inadequate provision of water and sanitation and inadequate drainage and garbage collection, are significant features of the world's fastest growing cities. Urban poverty also contributes to the lack of adequate water and sanitation in poor households.

**STUDY AREA: - (SHASTRI NAGAR) SOLAPUR**

Solapur is a city in South Western Maharashtra, India governed by Municipal Corporation. As of 2011 India census, Solapur had a population of 12, 02,951. Solapur has an average literacy rate of 71.2%, higher than the national average of 65%. The area is highly unhygienic. The sewerage system is of open type. Khani is the area where the liquid waste (sewage) and solid waste dispose together without any treatment, which result into spread of diseases in the area. A big pit made on open ground. All the sewage, waste water from this area collected in this pit. There is no further collection and transportation, disposal of this waste water.

**MATERIALS AND METHODS**

This survey was conducted in 2011, to study environmental sanitation status of Solapur slum area. In this area 351 settlements are situated. For survey purpose, (10% houses i.e.) 35 houses selected randomly. This ward has population 9439 with 335 houses. The strength of the data is based on the fact that the sample is nationally representative. Questionnaire and interview were following for study of health status and awareness of environmental sanitation. To check water quality physical and chemical analysis of water was done by standard methods (APHA).

**Environmental and housing conditions in Shastri nagar**

Slums in Solapur city are characterized by poor infrastructure facilities such as solid waste disposal, sewage disposal, and drainage which lead to environmental degradation and in absence of sufficient number of community toilets, these people are forced to excrete in the open. The accumulation of garbage was found to be a consequence of lack of dumping sites in the communities and the inability of the Solapur Municipal Corporation to collect the garbage for appropriate dumping. The informal settlements in study region continues to be characterized by poor living conditions, including lack of affordable house, clean water, inadequate toilet facilities, poor garbage disposal and drainage mechanisms, the slum also lack basic environmental facilities such as sanitation, drinking water supply, electricity etc. The situation of sanitation in Solapur city was to be very serious, as provision of toilets facilities was related to the household wealth. Communicable diseases are commonly found in this area due to poor housing conditions and environmental factors which account for 25% of all preventable ill-health (WHO, 1998). Similarly, the problems of indoor pollution in study region of were commonly found in low wealth households owing to congested rooms and lack of ventilation.

**Water quality status**

According to WHO report (2003), poor water quality is a leading cause of morbidity and mortality worldwide and a defining danger to life in slums. Growing number of poor people who lack basic needs, such as access to clean water and food are more susceptible to diseases driven by malnourishment and air, water and soil pollutants. In Shastri nagar, water supply was irregular and for short time (after 3 days for 2hrs) was found to be indiscriminately. Hygiene was also compromised during periods of water shortage. Members of slum settlements in Solapur city used sewerage water, rain water and water from broken pipes for various purposes such as drinking, washing.

**RESULTS**

An inadequate provision of piped water and proper sanitation are identified as serious problems affecting poor urban dwellers (Satterthwaite, 2003). WHO (1999) also observed that because of an inadequate provision of water, sanitation, drainage and garbage collection, urban areas pose serious health hazards for human populations, since many disease vectors tend to thrive where there is an inadequate provision of these services. The tap water and bore well water parameters are above permissible limits as per CPCB

## PHYSICO-CHEMICAL ANALYSIS OF SHASTRI NAGAR WATER (bore well and tap water respectively)

PARAMETER Mg/lit	A1	A2	A3	A4
PH	7.02	7.40	7.21	7.28
HARDNESS	252	242	238	248
DO	4.84	6.46	5.65	6.46
BOD	0.4	0.8	0.5	0.9
TS	2860	1060	2920	2400
TDS	2360	1000	2620	2240
TSS	500	60	300	160

  

PARAMETER Mg/lit	A1	A2	A3	A4
PH	8.02	8.12	8.23	8.15
HARDNESS	160	180	155	172
DO	3.24	3.64	4.05	2.83
BOD	0.4	0.81	0.41	0.81
TS	240	280	260	300
TDS	200	180	160	220
TSS	40	100	100	80

A1 = near school, A2 = near solid waste dumping site, A3 = near drainage line, A4 = Near Khani

## SURVEY FOR ENVIRONMENTL SANITATION

PARAMETER	NO. OF HOUSES			
	A1	A2	A3	A4
Income	B	A	A	B
Literacy	C	B	C	B
Health status	C	B	C	B
Medical Facilities	B	B	B	B
Standard of living	A	B	C	B
Surrounding cleanliness	C	C	B	B
Water Supply	B	B	A	A
Indoor Air quality	A	B	B	A
Sanitation practices	B	B	C	C
People's awareness	C	C	C	C

A1, A2, A3, A4 are the locations each include 10 houses (Where, A, B, C, are the grades A = Good, B = Medium, C = Poor.)

## Health and disease related issues in slum area

Slums adversely affect the health status of inhabitants due to lack of basic infrastructure and health services. Overcrowding in slums is common cause of psychological stress and increases the rate of disease transmission due to frequent contact. There is intense need for addressing vector born, water born diseases, in informal settlements and mobilization of health services for these urban poor. The health and medical facilities in the households of slum was found to be negligible. The accessibility and utilization of the healthcare services among a population from community was very poor. The illnesses among children aged under-5 years in study region were identified as respiratory tract infections, diarrhea, malaria, dengue, skin problems and malnutrition.

## SURVEY OF DISEASES

Diseases	Location			
	A1	A2	A3	A4
1. Water born diseases				
i) Vomiting	Y	Y	Y	Y
ii) Dysentery	Y	N	Y	Y
iii) Gastro	Y	N	N	N
2. Vector born diseases				
i) Malaria	Y	Y	Y	Y
ii) Dengue	N	Y	N	Y

Y= YES (disease found)

N= NO (disease not found)

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**CONCLUSION**

The purpose of this study was to analyze the availability of domestic water and sanitation in slum area, Solapur. The survey of slum area (Shastri Nagar) shows that people live in unhygienic conditions. The lack of environmental sanitation and safe water has significant negative health impact on people. Due to unsafe water, inadequate sanitation and unhygienic, people suffer from allergies, and diseases. Unsafe drinking water, poor environmental sanitation, unsanitary food preparation, improper disposal of waste and unclean household environment constitute a major burden on health and leading to causes ill health in children. People in study region are not educated which result into low income and low standard of living which result into lack of awareness in public about environmental sanitation and its importance. Ignorance of solapur Municipal Corporation toward public health, their standard of living, and provision of appropriate facility (water supply, solid waste and liquid waste management).

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