

ORIGINAL ARTICLE

Mapping and vulnerability assessment in urban slums of Nainital and Udham Singh Nagar districts of Uttarakhand: A Cross-sectional Survey

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ABSTRACT

Background: With increasing urbanization, number of urban slums is also rising. The health facilities and indicators in urban slums are poor as compared to other urban population. The present study presents an analysis of the health problems, utilization of health services and vulnerability of urban slums. **Aims & Objectives:** To map the slums in urban areas and assess the vulnerability of households. **Methodology:** The study was conducted in all urban slums of five cities of Nainital and Udham Singh Nagar districts namely Haldwani, Ramnagar, Rudrapur, Jaspur and Kashipur. Group discussions involving community members, ward surveys by ASHA workers and household level vulnerability assessment were done using standard format according to "Guidelines and Tools for Vulnerability Mapping and Assessment of Urban Health, 2017". **Results:** Most urban slum dwellers are daily wage laborers with major population suffering mainly from diabetes, hypertension, respiratory infection. Lack of drugs and diagnostic facilities are the major concerns. Infrastructure needs strengthening in most of the slums. Around three fourth of population belonged to vulnerable group with remaining in highly vulnerable group. **Conclusion:** There are social problems in urban slums like illiteracy, lack of awareness, unemployment which worsen the health problems. So, a holistic approach is needed for the solution.

KEYWORDS

Urban Slums, Vulnerability, aspirational districts, Uttarakhand, Nainital, Uddham Singh Nagar

INTRODUCTION

India is developing country which is becoming rapidly urbanized. According to the World Bank data 30.587% of Indian population was

living in urban areas which increased to 34.472% in 2019.(1) Another data from the World Bank shows that in the year 2020, population living in slums as a percentage of

urban population was 49%.(2) Though this percentage has been decreasing steadily but the people moving to or living in urban areas are increasing. It is projected that by 2030, around 40% of country's population will live in urban areas.(3) Health indicators in urban slums are usually poor as compared to other urban population and even worse than rural population in some cases. Problems faced by the urban poor living in slums are-

- Lack of access to basic services like water, electricity, sanitation and waste management.
- Substandard housing conditions with regard to space, light, ventilation and privacy.
- Increased rate of respiratory, gastrointestinal and skin infections including STDs (Sexually Transmitted Diseases).
- Lack of accessibility and/or affordability of health services.
- Inadequate infrastructure of health facilities.
- Unawareness about health issues and measures to be taken for prevention and treatment.

There are two aspirational districts in Uttarakhand- Uddham Singh Nagar and Haridwar.(4) Therefore, it is essential to first map the slums and then understand their health issues and the barriers preventing them from utilizing health services. Keeping this in mind, proposed survey had been planned with the aims of mapping of urban slums and assessing their vulnerability with regard to their health in one aspirational (Uddham Singh Nagar) and one non- aspirational (Nainital) district of Uttarakhand. The study was done with aims & objectives of-

- To map the urban slums.
- To assess housing and environmental conditions.
- To identify common health issues, their awareness for the same.
- To assess availability, accessibility and utilization of health services.
- To understand the barriers preventing them from utilization of services.

MATERIAL & METHODS

Study type & study design – Community based cross-sectional study

Study duration- The study was conducted from the month of February 2021 to July 2021.

Study population & setting- Study area included urban slums of following five cities of 2 districts namely Haldwani and Ramnagar from Nainital district and Rudrapur, Kashipur and Jaspur from Udham Singh Nagar district. Financial grant of rupees 50000 was provided for one district, so a total grant of 100000 was provided.

Strategy for data collection- Lists of slum areas and ASHAs working in them were obtained from block coordinators of Jaspur, Kashipur and Rudrapur cities ensuring that no slum area is left out of study. Likewise, lists were obtained from public health manager (PHM) of the only UPHC (Urban Primary Health Center) of Ramnagar and PHMs of 3 UPHCs of Haldwani namely UPHC Rajpura, UPHC Shani Bazaar and UPHC Shishmahal. Visits were made to all the cities to gather information and sensitize the concerned staff about the study in the initial days of the month of February. Out of total 180 wards of the five cities, 65 wards had urban slums where a total of 221 ASHAs (Accredited Social Health Activist) worked. ASHAs were trained and their queries were answered, if any, regarding filling up the Annexures A, B and C of 'Guidelines and Tools for Vulnerability Mapping and Assessment of Urban Health, 2017'(5). All the ASHAs were also instructed to prepare a spot map of their areas depicting urban slums. A total of 221 group discussions were planned. Annexure A of the study tool contains a format for group discussion to assess the available facilities, health needs and barriers of utilization among the vulnerable groups. Each group discussion included around 10-15 people in each ward/slum of the selected cities involving following persons-

- ASHA
- ANM (Auxiliary Nurse Midwife)
- Public Health Manager of UPHC
- Rogi Kalyan Samiti Members
- Urban Local Body Members
- People from vulnerable groups
- A facilitator and a recorder

Vulnerable population was selected based on the following criteria-

1. **Residential Vulnerability:** including homeless people, migrants, people living near industries or on roads, people living under ridges, along tracks, in shelters etc.
2. **Social Vulnerability:** based on their status, caste, religion, ethnicity, gender, age, disability etc.
3. **Occupational Vulnerability:** unemployed people, rag pickers, rickshaw pullers, vendors, beggars, factory workers etc.

Ethical Consideration: Clearance from the Institutional Ethics Committee was obtained prior to starting the survey. An informed consent was taken from each of the participant involved in group discussion and those not providing the consent were excluded from the discussion. So, a total of 213 group discussions were conducted filling up the annexure A as mentioned before in all of the five cities. 5 ASHAs in Rudrapur and 3 ASHAs in Haldwani could not be made available for conducting the discussions due to reasons like ASHA being sick, being busy in covid duties, not available in the city etc. After the group discussions, ASHAs were provided a chart to prepare the spot map of their areas focusing on location and extent of urban slums. Annexure B of the study tool had ward wise information about available basic facilities and demographic data. After the group discussion and filling up of annexures A and B, each ASHA was provided with 20 forms of annexure C which had questions for family wise assessment of vulnerability to be filled by the ASHAs during their survey. So, each ASHA had to select 20 families randomly from their areas to fill the forms. Some of the ASHAs returned 20 filled forms, some returned less than 20 forms and some didn't submit any filled form. Out of total 4420 forms distributed; response rate was 66.92% (2958 filled forms were received).

Following reasons were mentioned by the ASHAs for not filling up annexure C-

1. Being busy in covid duties
2. Lack of incentive for the work
3. Being out of city or unwell

Data analysis- All the data were filled in excel sheets and analysis was performed using MS Excel. The data is presented in numbers and percentages in the form of tables and figures.

RESULTS

Section A: Group Discussion

It can be seen from Table 1 that most of the people living in these slum areas are daily wage laborers who are not employed throughout the year. All the slums are residentially as well as occupationally vulnerable. In Jaspur and Kashipur, majority of the slum dwellers are Muslims whereas this majority is formed by Hindus in Rudrapur and Ramnagar. In Haldwani, almost equal percentage was found. The health issues faced by the residents were mostly the same which included communicable diseases like tuberculosis and other respiratory infections and non-communicable diseases like diabetes, hypertension, joint problems etc. Reasons perceived responsible by the population included illiteracy, poverty, lack of awareness, lack of facilities and poor hygiene among major causes. The slum area of Haldwani was having nearest health facility within 1 km as reported by 92% of the participants and this was least for Kashipur (56%). Utilization rate of services was best for Haldwani and poorest for Ramnagar. The major causes for non-utilization were the issues faced at health facilities like lack of certain drugs and diagnostics, irregular availability of doctors, lack of specialist doctors.

Table 1: Findings of the group discussions as per annexure A (percentages are calculated as a part of total participants city-wise)

Variable/City	Haldwani	Jaspur	Kashipur	Ramnagar	Rudrapur
Major profession	Daily wage laborer (61%)	Daily wage laborer (86%)	Daily wage laborer (64%)	Daily wage laborer (90%)	Daily wage laborer (67%)
Vulnerability criteria	Residential/ Occupational	Residential/ Occupational	Residential/ Occupational	Residential/ Occupational	Residential/ Occupational

Variable/City	Haldwani	Jaspur	Kashipur	Ramnagar	Rudrapur
Religious profile	Muslims (50.3%) Hindus (49.7%)	Muslims (80%) Hindus (20%)	Muslims (67%) Hindus (33%)	Hindus (90%) Muslims (10%)	Hindus (67%) Muslims (33%)
Major health problems	Hypertension, Diabetes, Arthritis, Asthma, Tuberculosis	Hypertension, Diabetes	Hypertension, Diabetes, Asthma, Tuberculosis	Hypertension, Diabetes, Asthma, Thyroid problems, Joint problems	Hypertension, Diabetes, Asthma, Joint problems, Tuberculosis
Perceived reasons for health problems	Poverty, Illiteracy, Lack of awareness, Lack of facilities, Poor hygiene and sanitation	Illiteracy, Lack of awareness, Lack of public health facilities and Lack of services in public health facilities	Poverty, Lack of awareness, Lack of facilities, Poor hygiene, and sanitation, Food adulteration	Poverty, Lack of awareness, Unemployment, Lack of health facilities	Illiteracy, Lack of awareness, Addiction, Lack of health facilities, Poor hygiene and sanitation
Nearest health facility within 1 km	Reported by 92% of participants	Reported by 75% of participants	Reported by 56% of participants	Reported by 70% of participants	Reported by 76% of participants
Health facility utilization rate	98%	92%	72%	60%	78%
Services available	Health checkup, Antenatal care, Drugs and Immunization, Diagnostic Drugs and Diagnostic facilities	Health checkup, Drugs and Diagnostic facilities	Health checkup, Antenatal care, Drugs and Diagnostic facilities	Health checkup, Drugs and Diagnostic facilities	Health checkup, Drugs & Diagnostic facilities, Vaccination, Antenatal care, Delivery services
Issues faced at health facilities	Availability of specialist doctors especially gynecologist	Lack of antenatal care, normal delivery, caesarean section, non-availability of doctors especially pediatrician	Regular availability of doctor	Regular availability of doctor	Lack of certain drugs

Section B: Ward Level Vulnerability

Jaspur: In slum location the approx. literacy rate of males is 52% and females is 41% whereas in non- slum location it is 61% in males and 58% in females. The total no. of govt./ public school is 6 and private schools 15. Total no. of AWC (Anganwadi Center) is 26 of which 9 are functional and 17 are non- functional. There are 04 primary and 04 secondary public health facilities and 02 primary non- govt. health facility. There are 06 diagnostic centres/Labs with facilities like x-ray, blood and urine testing. There are 10 ANM, 10 ASHA and 26 AWW (Anganwadi Worker).

Rudrapur: In slum location the approx. literacy rate of males is 55% and females is 47% whereas in non- slum location it is 62% in males and 58% in females. The total no. of govt./

public school is 22 and private schools 35. Total no. of AWC is 52, all of them are functional. There are 22 primary and 01 secondary public health facilities and 04 primary non- govt. health facility and 17 secondary non- govt. health facilities. There are 04 diagnostic centres/Labs with facilities like x-ray, blood and urine testing. There are 28 ANM, 42 ASHA and 52 AWW.

Kashipur: In slum location the approx. literacy rate of males is 59% and females is 53% whereas in non- slum location it is 60% in males and 52% in females. The total no. of govt./ public school in these wards is 15 and private schools 19. Total no. of AWC in these wards is 29, 19 of them are functional. There are 13 primary and 11 secondary public health facilities and 07 primary non- govt. health

facility and 08 secondary non- govt. health facilities. There are 08 diagnostic centres/Labs with facilities like x-ray, blood and urine testing in these wards. There are 18 ANM, 26 ASHA and 29 AWW.

Ramnagar: In slum location the approx. literacy rate of males is 55% and females is 51% whereas in non- slum location it is 67% in males and 61% in females. The total no. of govt./ public school in these wards is 20 and private schools 24. Total no. of AWC in these wards is 24, all of them are functional. There are 15 primary and 01 secondary public health facilities and 04 primary non- govt. health facility and 02 secondary non- govt. health facilities. There are 10 diagnostic centres/Labs with facilities like x-ray, blood and urine testing in these wards. There are 15 ANM, 30 ASHA and 24 AWW.

Haldwani: In slum location the approx. literacy rate of males is 59% and females is 54% whereas in non- slum location it is 69% in males and 65% in females. The total no. of govt./

public school in these wards is 20 and private schools 18. Total no. of AWC in these wards is 23, all of them are functional. There are 08 primary and 04 secondary public health facilities and 03 primary non- govt. health facility and 09 secondary non- govt. health facilities. There are 12 diagnostic centres/Labs with facilities like x-ray, blood and urine testing in these wards. There are 17 ANM, 20 ASHA and 23 AWW.

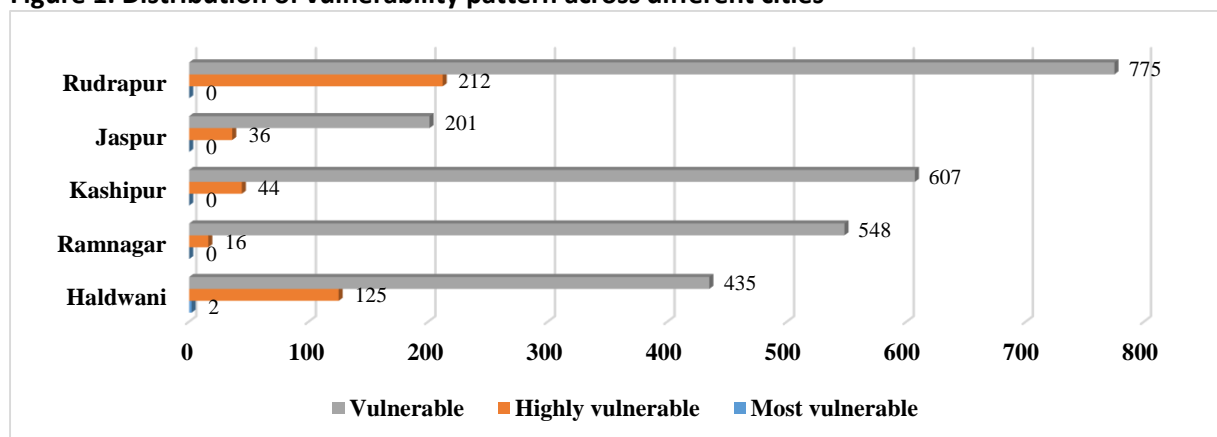
Section C: Household Vulnerability

It can be assessed from figure 1 that most of the families in all the cities were in the vulnerable group. Most vulnerable households were found only in Haldwani in a comparatively less percentage. Other four cities did not have any household which belonged to the most vulnerable group. Proportion of highly vulnerable households varied from 2.8% in Ramnagar to 21.8% in Haldwani.

Table 2: Severity of vulnerability of households across different cities (standard scoring system as per annexure C was used)

Cumulative vulnerability scoring	Haldwani	Ramnagar	Rudrapur	Kashipur	Jaspur
Most vulnerable (0-15)	2 (0.4%)	0	0	0	0
Highly vulnerable (16-30)	125 (21.8%)	16 (2.8%)	212 (21.7%)	44 (6.8%)	36 (15.7%)
Vulnerable (31-42)	435 (77.8%)	548 (97.2%)	775 (78.3%)	607 (93.2%)	201 (84.3%)

Figure 1. Distribution of vulnerability pattern across different cities



DISCUSSION

According to a study conducted by Bikash Bage and Padi Hana, 55.5% of the respondents were having permanent housing structures made with concrete, a proper ventilation facility, and separate space for cooking. And 24.3% of the houses were made up of pukka houses with

mud and tin roof and non-concrete walls/brick walls along with plastic or thatch roof. While 20.2% of housing condition were kutcha houses without properly engineered structure that was prone to collapse by natural calamity(6). In another study conducted by BT Rao and JS Thakur, it was observed that that 15

slums (36.6%) were highly vulnerable, 21 (51.2%) were moderately vulnerable and 5 (12.2%) were low vulnerable. The proportions of population in high, moderate and low vulnerable areas were about 49,000 (15.5%), 1,39,253 (44%) and 1,28,800 (40.5%), respectively(7).

CONCLUSION

In the group discussions, it was found that the major prevailing social problems were unemployment, poverty, illiteracy, lack of awareness, poor sanitation, and hygiene; and major health problems were infectious diseases like TB, respiratory tract infection along with burden of non-communicable diseases like diabetes, hypertension, cancers, bone and joint related problems.

At the level of households, very few households were classified as “most vulnerable”. In fact, 4 of the 5 cities had zero percentage households as “most vulnerable” which justifies the claims of Government of India that they have reduced absolute poverty at 2USD PPP. Some households were classified as “highly vulnerable” and majority of them were in the vulnerable group according to the scoring system that was employed for the study.

RECOMMENDATION

Lacunae were found at the level of ASHA and at the level of residents of slum area.

ASHA workers lacked knowledge and proper training in preparing correct map of their areas and were also reluctant to carry out the survey. Their training regarding the same and provision of honorarium for additional survey is most likely to provide the solution.

Slum dwellers need to be made aware of available health insurance schemes and preventive measures against both communicable and non-communicable diseases. Social measures like providing job opportunities, improving literacy, providing more and better-quality services in available health facilities also need to be taken account into.

LIMITATION OF THE STUDY

Each ASHA covered only 20 households out of their total coverage area due to resources constraints.

Around 30% ASHAs didn't submit filled annexure C leading to exclusion of certain areas in the study.

RELEVANCE OF THE STUDY

The study provides baseline assessment of urban slums in terms of vulnerability. Further longitudinal studies are required.

AUTHORS CONTRIBUTION

All authors have contributed equally.

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NHM, Uttarakhand

CONFLICT OF INTEREST

Nil

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