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Community Health Analysis and Evaluation of Bardibash Municipality (Gauridada), Nepal

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Abstract:
Introduction: A community is a group of people living in the particular places having common religion, norms and value. It is a social group with geographical boundaries. Community Health Diagnosis (CHD) address the total well-being of a people occupying a particular place, eliminating health related disease. "CHD is a comprehensive assessment of the state of entire community in relation to its economic, social, physical, and biological environment". It is a process of examining the pattern of disease in the community and describing it in terms of its importance factors mortality, morbidity, and fertility rate. CHD is use to determine the magnitude of community health related problem, fixing the health problem in priority order, running effective health intervention program and exploring the existing resources.
Materials and Methods: The study was conducted by face-to-face interview among the 290 household of ward 2 of Bardibas Municipality, Mahottari district, Madhesh Province of Nepal, using semi-structured questionnaire with inclusion of community health parameters. The convenient sampling method was used for the study. Verbal informed consent was taken from the respondent as well as the local administrative office before commencing the study. The data was collected in the month of May-June 2017.
Results: The result showed that the community health status of the study area was satisfactory but still there is huge gap between the needs, services and their utilization. Although maximum children are vaccinated according to expanded programme on immunization, most of the people used latrine for defecation, and almost resident use tap water for drinking.
Conclusions: The various related stakeholders of the community should work efficiently to mitigate the gap between health problems and needs in the community. The health program should be specially planned, implemented and analyzed in the deprived and marginalized area of society to address the disparity in the social, economic and health needs.

Keywords
Child health care, community health diagnosis, family planning, knowledge and practices, maternal and child health care

INTRODUCTION

Community can be used as a basic functional unit to represent the health and socio-economic status of a country. So, with the help of Community Health Diagnosis (CHD), we aimed to analyze the health status of a community and the nation in a micro level. According to WHO definition," CHD is a quantitative and qualitative description of the health of citizens and the factors which influence their health. It identifies problems, proposes areas for improvement and stimulate action" Health status of a country depends on the socioeconomic status of country people, their level of education, access to health services and so on. Community can be the basic unit for the analysis of these health determinants as they form a system of a community. Thus, Community Health Diagnosis helps in knowing the overall health scenario of the country. Community Health Diagnosis is a comprehensive assessment of the health status of the entire community in relation to its social, physical and biological environment. The purpose is to define existing problems, determine available resources and set priorities for planning, implementing and evaluating health actions by and for the community. Community health diagnosis is therefore a process of examining the overall health status of community in order to promote health, prevent disease and manage health services for the community through the optimum utilization of locally available resources. The general objective is to analyze the community's health status and develop a plan to address issues using local resources. Specific objectives include collecting information on geographical aspects, demographics, socio-economic conditions, sanitation, hygiene, gender, and cultural practices. The study also aims to identify trends in morbidity and mortality, assess health-seeking behavior, and evaluate knowledge and attitudes towards communicable and non-communicable diseases. The study also explores healthcare services availability and utilization, focusing on maternal, child, adolescent, and nutritional health. A Micro Health Project (MHP) was conducted to address prioritized needs.

MATERIALS AND METHODS

Based on curriculum of MBBS first year, we conducted a four-week Community Health Diagnosis under the supervision of Community Medicine Department of Janaki Medical College and Teaching Hospital in the month of May – June 2017. For this purpose, the department did feasibility study. Based on the feasibility study Bardibash municipality-ward no. 2 is selected for community health diagnosis. We conducted observational and cross-sectional study in Bardibash Municipality of Mahottari district. Bardibas Municipality is located in the Mahottari district of Madesh Province, Nepal, covering a total area of 315.57 sq. km. According to the 2011 Nepal census, it had a population of 66,358, resulting in a population density of 210 people per sq. km. Geographically, the municipality lies between 26°54'6.84" N to 27°08'46.9" N latitude and 85°47'42.67" E to 85°56'42.97" E longitude, with an elevation ranging from 136m to 774m. The municipality consists of 14 wards. Bardibas is bordered by Dhanusha District's Mithila Municipality and Bhangaha Municipality in the east, the Banke River, Sarlahi, Mahottari, and Gaushala Municipality in the west, Kamalamai Municipality of Sindhuli District in the north, and Aaurahi Municipality and Bhangaha Municipality of Mahottari District in the south [1]. Social map for study site is shown in Figure 1.

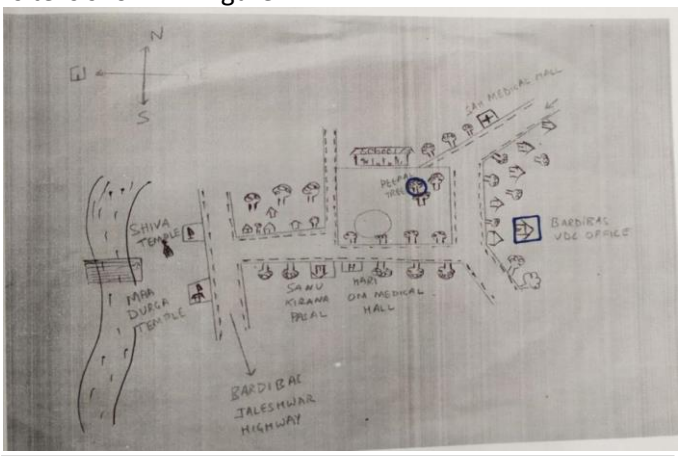

Figure 1| Social Map of CHD site Bardibas Municipality

All the students of 13th batch were divided into 4 groups (25 in each group) for four wards. Each group was supervised by a faculty and was also assisted by female community health volunteers (FCHVs) [2]. The tools used included pre-tested questionnaires, observation checklist, weighing machine (for children and adult) and measuring tape. General information of our selected ward is described in the table below. There was 833 Household. Out of 833 households, we selected 35% of total households by simple random selection technique that totaled sample size of 290 household. We covered allocated number of households in the ward. The topics covered in the household survey questionnaire included: Demographic profile, educational status, Occupation, Educational level, Morbidity, Health and Sanitation, MCH related parameters and family planning. After the data collection, compilation was done in Excel sheet and analysis was done using SPSS software version 24. Approval was taken from the municipality office before conducting CHD programme.

Informed Consent was taken from study participants. Confidentiality and anonymity were maintained. Department of Community Medicine approved the study as a part of its curriculum.

RESULTS

In terms of age, the largest population in Bardibas Municipality was between 10-14 years of age with 8,803 population size where 4,421 were males and 4,382 were females. The least populated age group was between 70-74 years of age with total 918 population, which consists of 474 males and 444 females. The top 5 most populated age groups were between 10 -14 years (8,803), between 5-9 years (7,790), between 15-19 years (7,079), below 4 years (5,995), and between 20- 24 years (5,312) with the total population of 34,979. In contrast, the bottom 5 least populated age groups were between 70-74 years (918), above 75 years (1,047), between 65-69 years (1,356), between 60-64 years (2,020), and between 55-59 years (2,024) with total population of 7,365. The median age-group of total population falls between 35-39 years and between 40-44 years with average population of 3,720. The population with age-group 55-59 years had male to female ratio of 1.10, which states that this age group had maximum males as compared to females. Similarly, age group of 25-29 years had most female population as compared to male population with male to female ratio of 0.71.

Figure 2 shows population pyramid of Bardibas municipality. Total population was 46,814; 54% of these individuals were female and 46% were male, yielding a sex ratio (number of males per 100 females) of 85. One-third (34%) of the population was under age 15. Children under age 5 and adolescents aged 10-19 account for 11% and 23% of the population, respectively. About 7% of the population was age 65 and above, a group considered as a dependent population. Figure 3 shows the population pyramid as per CHD we conducted at Bardibas municipality, which show negligible differences between the survey and national reports.

Table 1A| Socio-economic feature of Bardibas Municipality (n=290)

Characteristics	Number	Percentage
Education level		
No formal education	67	23.5
Primary	75	25.5
Secondary	90	31
Higher education	26	9
Graduate	32	11
Main source of income		
Agriculture	160	55
Business	64	22
Labor	20	7
Religion		
Hindu	278	96
Muslim	9	3
Others	3	1
Ethnicity/Caste		
Brahmin	78	27.5
Janjati	81	27
Dalit	61	21
Others	70	24.5
Type of family		
Nuclear	151	52.5
Joint	52	18
Extended	87	30
Language		
Maithili	133	45
Nepali	148	51
others	9	3

The socio-economic status of participants of Bardibas Municipality is shown in Table 1A. It shows a literacy rate of 77%, with agriculture being the main source of income for 55% of the population. Hindus were 96% of the

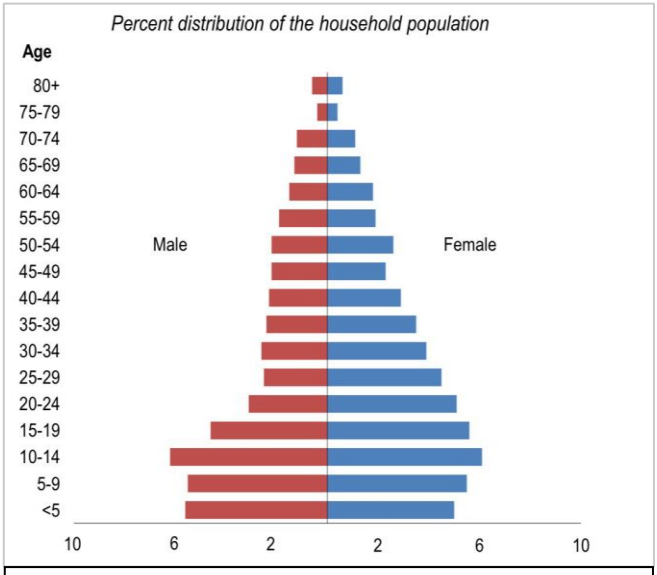

Figure 2| Population pyramid of Bardibas Municipality as per national survey

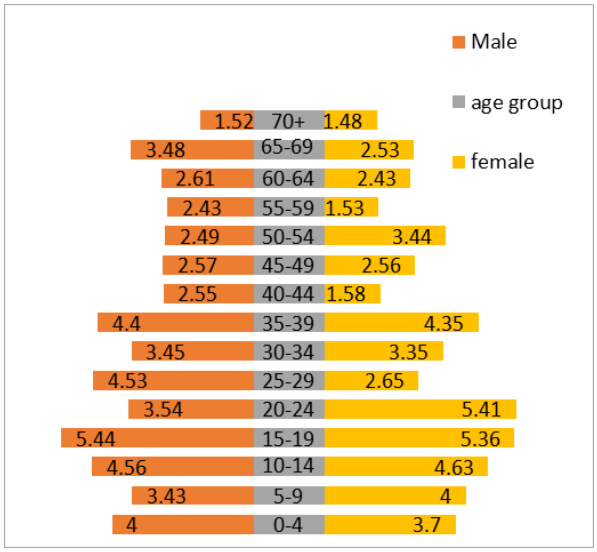

Figure 3 | Population pyramid of Bardibas Municipality as per CHD

residents, followed by Muslims, which was observed by 3% of the population compared to a Kathmandu based study [3]. The largest ethnic group was Janjati, making up 28%, closely followed by Brahmins at 27.5%. Most families, around 52.5%, were nuclear family, and Nepali was the most commonly spoken language, spoken by 51% of the population.

Table 1B| Environmental Status of Bardibas Municipality (N = 290)

Characteristics	Number	Percentage
Types of Toilets		
Modern	249	86.5
Pit	41	13.5
Water waste management		
Field	203	70
Drainage	49	17
Road	38	13
Solid waste management		
Municipality	189	65
Burning	44	15
Composting	41	14
Others	17	6
Source of water		
Tap water	270	93
River water	6	2
Others	15	5
Major Crops		
Rice	247	85
Wheat	35	12
Maize	6	2
Millet	3	1
Type of house		
Pakka	110	38.5
Semipakka	93	32
Kaccha	87	30
Type of chulo used		
Smoky	107	36.5
Smokeless	183	63
Distance of Cattle-Shade from house		
Attached	35	12
<25meters	84	29
>25meters	171	59

Table 1B shows that socio-environmental status of Bardibas municipality. Majority of them used modern type of toilet 86.5% followed by pit hole 13.5% which shows better than Dolakha and Ramechhap districts as per study by Shrestha A et al [4]. Out of 290 households, 70% used field water waste management followed by drainage 17%. Environmental sanitation was highly determined by the managed solid waste disposal. In the sample, Municipality workers pick up the 65% waste in most of the households followed by burning or burying in pit. 93% of the population use tap water primarily followed by river water 2% and 5% others. The major crop was rice (85%) followed by wheat (12%), 3 % was maize and millet. Around 30% of the households had kaccha house, i.e. house made of mud and stone, whereas 32% had kaccha-pakka house and the remaining had pakka house, i.e. house made up of concrete, 63% of household use smokeless chulo and 37% have smoky one compared to Jumla district of Nepal as per study conducted by Shahi and Rawal [5].

Table 2| Social Status of Bardibas Municipality

Social status	Number	Percentage
Support dowry system	223	77
Support under age marriage	81	28
Support untouchability	29	9.2
Knowledge about Bounded labour system	232	80.3
Consume alcohol	154	53.3
Smoking	180	62.2

The Table 2 shows the social status of Bardibas municipality. Majority of population support dowry system (77%), 28% support underage marriage and 10% support untouchability similar to study by Sharma A[6]. Majority (80.3%) of the population knows about bounded labor system. More than half (53.3%) of the population consume alcohol and 62.2% smoke.

Table 3| Source of Health Information of Bardibas Municipality

Characteristics	Number	Percentage
Source of health information	Number	Percentage
Health project	75	26
Health personnel	49	17.8
Elderly people	41	13.2
Others	125	43
Mass media most widely used		
Television	241	83
Radio	32	11
Newspaper	17	6

Table 3 shows the source of health information and mass media used in Bardibas municipality. Out of 290 households, 26% had health information through health projects, 17.8% through health personnel and 43% from other sources. Most used mass media is television which was 83% followed by radio 11% and newspaper 6%.

Table 4| Maternal and Child Health

Maternal and child health	Number	Percentage
ANC visit		
4times	203	70
>4times	15	5
<4times	73	25
PNC visit		
Weekly	44	15
Monthly	218	75
During complication	29	10
Medication		
Iron and folic acid	276	95
Deworming	261	90
Alcohol abstinence	287	99
Family planning		
Knowledge about family planning	278	96
Use of family planning	261	90
Temporary method		
Condom	29	10
IUCD	44	15.5
OCP	73	25.5
Sangini sui	145	50.0
Permanent method		
Vasectomy	3	1.0
Minilap	73	25
Laparoscopy	29	10
Temporary	186	64.7
Knowledge about balanced diet	258	89.3
Knowledge about DOTS	276	95
Knowledge about first Aids	241	83

Table 5. Knowledge on Disease (n=290)

Diseases	Number	Percentage
Tuberculosis	227	78.39
Diarrhea	283	97.56
Pneumonia	260	89.55
Leprosy	156	53.66
Taeniasis	266	91.63
HIV/AIDS	179	61.67
Malaria	285	98.26
Kalazar	150	51.57
Dengue	273	94.03

Table 4 shows the maternal and child health care of Bardibas Municipality. Most(70%) of females did ANC visit 4 times, 25.5% went for less than 4 visits and only 5% went for more than 4 times compared to Neupane et al [7].

Three fourth (75%) of had gone for PNC visits on monthly basis, 15.5% weekly and 10% during complications. 95% had taken iron folic acid and 90% had taken deworming. Majority 96% have knowledge about family planning and 90% of them use it. Sangini sui was the most common temporary method of family planning used which was

Table 6|Immunization status of children in Bardibas municipality under 5 years (n=108)

Immunization status	Number	Percentage
BCG	87	81.7
DPT	66	61
PCV	84	78
MR	65	60.3
OPV	84	78
JE	54	49.5
IPV	81	75
Others	57	53.5

50% followed by OCP, IUCD and condom as compared with study by Keyal and Moore in eastern Nepal [8]. 89% had knowledge about balanced diet, 95% had knowledge about DOTS and 83% had knowledge about first Aids.

Table 7. Nutritional status of under 5 children of Bardibas municipality (n=108)

Nutritional status	Number	Percentage
MUAC		
Normal	95	88
Moderately acute malnutrition	9	8
Severe acute malnutrition	4	4
Weight for age		
Normal	91	84.7
Underweight	17	15.3
Height for age		
Normal	76	70
Moderately stunted	27	25
Severely stunted	5	5
Weight for height		
Normal	98	90.71
Moderately wasted	4	3.28
Severely wasted	6	6.01

Table 5 shows the knowledge on common disease. Out of 290 households, the percentage of population having knowledge about tuberculosis was 78.39%, diarrhea 97.56%, pneumonia 89.55%, leprosy 53.66%, taeniasis

91.63%, HIV/AIDS 61.67%, malaria 98.26%, kalazar 51.57%, dengue 94.03%. Out of these diseases dengue was the most prevalent disease in Bardibas municipality. Table 6 shows the immunization status of children in Bardibas municipality under 5 years. Among children of 290 household with 108 children, 81.7% had taken BCG, 61% had taken DPT, 78% had taken PCV, 60.3% had taken MR, 78% OPV, 49.5% JE, 75% IPV and 53.5% others. Table 7 presents the nutritional status of children under 5 years old in Bardibas Municipality. Among 108 children, 88% had a normal MUAC (Mid-Upper Arm Circumference), while some were moderately or severely stunted. In terms of weight-for-height, 90.71% were within the normal range, 3.28% were moderately wasted, and 6.01% were severely wasted. Overall, 9.20% of the children were suffering from acute malnutrition. We observed 84.7% of children were of normal weight and 15.3% were underweight. From height for age, we observed almost 30% of children were either moderately or severely stunted.

Micro Health Program

The Actual Needs of the Gauridada community of Bardibash Municipality was found to be Dengue, Malaria, Diarrhea and Tuberculosis (Figure 4). On prioritization, the real need was found to be prevention of dengue in comparison to other actual needs.

To address these problems, we decided to implement small-scale health projects to raise awareness and encourage the community to actively participate in solving their health challenges. We relied heavily on locally available resources and encouraged active participation from the public. In response to the community's needs, we demonstrated ways to protect themselves from dengue. We organized street dramas using chart paper, performed road plays, and demonstrated the use of mosquito nets (Jhool). These activities helped educate the community about dengue prevention in an engaging and accessible way.

School Health Program

School is one of the best places to impart health education. So, we decided to interact with the students at schools of Bardibash Municipality. The main objective of our program was to educate school students about observed health problems especially focused on dengue. We also encouraged them to adopt health promoting practices, personal hygiene, environment sanitation. We found students were very excited and eager to learn. We got positive feedback both from student and teacher and urged us to run such program in near future. Limitation of the study: This study does not represent the whole population of the Mahottari districts. The study has limited area covered, hence generalization in national level is not possible.

CONCLUSION

The Community Health Diagnose program helped us to identify problems of community and raise the awareness of identified health problems, its prevention and promotion strategies. Similarly, we were also benefitted from the necessary process of integrating communication skills and a public health approach. We were able to impart knowledge to the community and

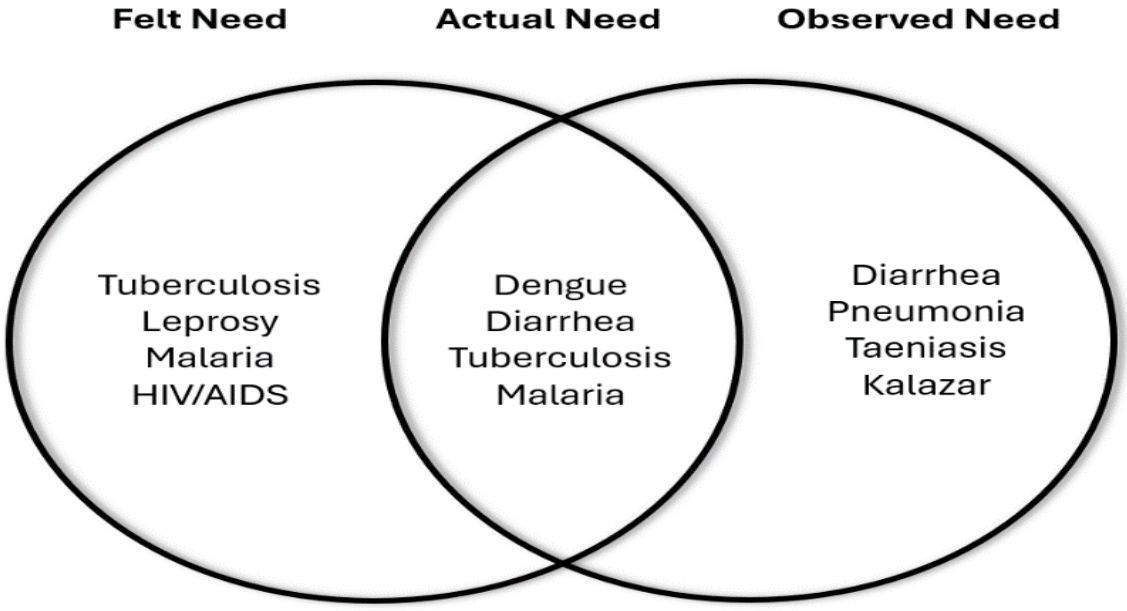

Figure 4 | Previously Felt, Observed and Actual Need for awareness against the Health Problem in the Community

schools regarding the health problems and suggest betterment of health-related activities and health seeking activities. Further studies can be done in a large scale to identify the different health and social behavioral problems in order to replicate in other settings.

ADDITIONAL INFORMATION AND DECLARATIONS

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Author Contributions: Following team members [name (ID)] have equally contributed to the formulation and final revision of the original report.

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Group A	**Group B**	**Group C**	**Group D**
GL (939); RS (940); YM (941); CR (942); BK (943); DC (944); MB (945); AC (946); RS (947); PB (948); PS (949); SNR (950); BKS (951); BT (952); MB (953); RM (954); AS (955); HR (956); UR (957); RA (958)	BK (959); AKY (960); CG (961); KG (962); KG (963); PB (964); SP (965); AKG (966); MKS (967); NJ (968); DS (969); AKM (970); PC (971); MK (972); MRS (973); SKY (974); MK (975); KK (976); BSB (977); LK (978)	DLL (979); KY (980); RKM (981); MRY (982); RS (983); GY (984); ST (985); RT (986); SH (987); HR (988); SP (989); KK (990); AS (991); AK (992); DP (993); SS (994); AA (995); NK (996); KK (997); IM (998)	SS (999); RS (1000); KS (1001); H (1002); GK (1003); SS (1004); PR (1005); RPS (1006); RJ (1007); FM (1008); SK (1009); SS (1010); MDAS (1011); PK (1012); Aa (1013); A (1014); PK (1015); ANS (1016); AT (1017); PP (1018)

Conflict of interest: The authors declare no conflict of interest.

Data Availability: Data will be available upon request to corresponding authors after valid reason.

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