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Research Article

Malaria as Public Health Problem and SWOT Analysis of Program Approach- A Case Study from Baran District Rajasthan

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ABSTRACT

Objective: To describe the magnitude of Malaria as public health problem in a backward district in Rajasthan and highlight the strengths, weaknesses, opportunities and threats of interventions followed by district health authorities.

Findings: Malaria is a significant problem of public level in Baran district as evident with the reported morbidity and mortality data in district HMIS Reports. The various associated factors exaggerate the problem in District. The existing program has certain strengths, weaknesses, opportunities and threats.

Conclusion: Perception of Malaria as mere medical problem leads to adopt and over relying on technical fixes. The social, economic, political, cultural and ecological inter-linkages of Public Health with epidemiological lens help to understand the problem with public health approach. The existing approach needs strengthening with additional modifications.

Keywords: Malaria; SWOT; Public Health

INTRODUCTION

Baran is one among districts under Kota administrative division situated in southeastern Hadoti area of Rajasthan, The district has direct rail and road connectivity with other neighboring districts of state and Madhya Pradesh. A study on Inter-Regional Economic Inequalities in Rajasthan categorized the medium HDI scorer Baran as a "Backward" district [1]. The private sector power plant industries are flourishing in the district under the patronage of government but districts' economy primarily thrives on Agriculture with little share of MSME (District Census Handbook, Baran Village and Town Directory, 2011) [2]. Health distribution within the district is unequal at the block to block along with social, economic and political lines and axis. Health status of Baran (Like any other district in India) is also a reflection of Socioeconomic and Political inequalities that means the problem lies in the distribution of available power and resources. Prevalent communicable diseases in district are PUO (Pyrexia of Unknown Origin), Pneumonia, Scrub Typhus, Enteric Fever, ARI/ILI, Dengue, and Malaria, according to IDSP presumptive surveillance data of the year 2015 [3].

METHODOLOGY

The objective of this paper is to describe the magnitude of Malaria as public health problem in a backward district in Rajasthan and highlight the strengths, weaknesses, opportunities and threats of interventions followed by district health authorities. This paper is an important part of primary research fieldwork at Baran District for detailed report titled as "A Study of Health and Health Services System of Baran District Rajasthan."

Steps taken for above-mentioned descriptive study are as follows

- Step 1: Secondary research: Internet searches (using keywords such as "Health, "Socio-demographic Profile," "Baran") and published reports
- Step 2: Primary processing of secondary data: Formulating semi structured interview schedules
- Step 3: Field visit: Observation and Interviews of key informants
- Step 4: Data analysis and Report writing

PROGRAM APPROACH

Since the vertical malaria program merged with general health services, separate Human resources are unavailable under this program. Due to this non-availability of dedicated staff under the NVBDCP program only curative services for Malaria are available at Public funded institutions of District.

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The Medical Officers reveals and researcher observed that diagnosis through slide microscopy tests and card tests (using RDT kits) conducted under MNJY and the patient receives anti-malarial medications from Drug distribution Counter of MNDY after diagnostic confirmation.

One old aged clerical staff at CMHO office revealed that earlier in the days of vertical malaria program, they used to perform certain field activities for vector control such as spraying, fogging, antilarval, and source reducing activities.

However, according to him, frequency of such interventions/ activities has reduced nowadays, and these activities are now becoming departmental formalities.

The Annual report shared by CMHO office and district HMIS reports was also unable to give information about such field activities.

MAGNITUDE OF PROBLEM

The following is the trend of Vector Borne Diseases (other than Malaria) related diagnostic services in District (Table 1):

The data, as mentioned above, is too little to interpret any implications. Still, presence of Kala-Azar in district reflects the most impoverished socio-economic conditions of specific households in the district.

The MNJY has facilitated expansion of diagnostic services in public health institutions. Following is the Trends of diagnostic services for reported Malaria cases in district (Table 2).

Blood smear examination data shows that the total annual blood smear examination decreased since 2014-15. However, it has not decreased drastically, but it might be an indicator of the shrinking reach of the vertical program towards the community because of passive surveillance.

The diagnostic services for Malaria widened with the introduction of RDTs. Since RDTs are a highly sensitive test, the cases would further need to confirm through microscopic examination before starting antimalarial medications.

Table 1: District HMIS reports on vector borne disease.

Particulars	2014-17	2017-18	2018-19
Kala Azar (RDT)-tests conducted	NA	1490	37
Kala Azar positive cases	NA	218	0
Post-Kala-Azar Dermal Leishmaniasis (PKDL) cases	NA	0	0
Dengue-RDT test positive	NA	216	115
Dengue-(ELISA) test positive	NA	36	12
Tests conducted for JE	NA	0	0
Tests positive for JE	NA	0	0

Table 2: District HMIS reports on malaria.

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
MICROSCOPY					
Blood Smears Examined	136226	131230	33260	57181	116742
P. vivax positive	1258	1127	260	2122	365
P. falciparum positive	69	63	69	42	38
RDT					
RDT conducted for Malaria	NA	NA	NA	374	2750
P. vivax positive	NA	NA	NA	0	42
P. falciparum positive	NA	NA	NA	0	8

Implication for Table 2

If the program approach would shrink and diagnostic criteria remain highly sensitive, the trend showing no. of cases might not show significant changes. However, it will result in over-medicalization of community as people falsely labeled as Malaria case would also receive Antimalarial medicines from practitioners, despite investing more resources in technology (Table 3).

Implication for Table 3

Malaria (including other vector-borne diseases) causes morbidity mainly in adults in high transmission settings. Mortality occurs mainly in nonimmune individuals (for example, small age group children or travelers from low transmission settings), and malnourished immune individuals, where the healthcare delivery system is poorly developed or remains absent.

Because Annual Parasitic Incidence, Annual Falciparum Incidence, Slide Positivity Rate (SPR), Slide Falciparum Rate (SFR) and Annual Blood Examination Rate (ABER) are program indicators, these indicators reflect the trends of reported malaria cases under program.

The following is the trend of Malaria Program Indicators (Table 4).

Implication for Table 4

If clinical and diagnostic services abandoned under the malaria program, immediately all these indicators will show the highest performance. We can live in the euphoria of the documentary tackle of Malaria as a public health problem.

ASSOCIATED FACTORS IN MALARIA TRANSMISSION AND PROBLEM EXAGGERATION FOR PUBLIC HEALTH IN BARAN

Poor nutritional status of Baran characterized by the high prevalence of ACM, SCM, and Anemia points towards food insecurity in the district (National Family Health Survey NFHS-4) [4]. The world food program has categorized Baran as moderately food insecure district despite of the fact that Baran is one among highest wheat producer districts of Rajasthan (Food Insecurity in Rajasthan "A Secondary Data Analysis") [5].

According to GOI Census 2011, more than 40% of district population belongs to marginalized social section. The vital health indicators such as CBR, CDR, IMR, U5MR and MMR

Table 3: Mortalities (Reported) due to malaria in district.

	2014-15	2015-16	2016-17	2017-18	2018-19
Adult (Vivax)	0	0	1	86	53
Falciparum	0	0	0	0	0

Table 4: Calculated on the basis of district HMIS data.

Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
ABER	11.14	10.73	2.72	4.67	9.55
API	1.08	0.97	0.26	1.77	0.33
AFI	0.056	0.05	0.056	0.034	0.03
SPR	0.97	0.9	0.99	3.78	0.34
SFR	0.05	0.04	0.2	0.07	0.03
Population: 1222755 (Constant)					

of the district are reportedly poor. The poorest public health is concentrated in blocks with higher concentration of socially marginalized population.

The soil of district has slow to very slow permeability and the district possesses a considerably large canal network concentrated in agriculturally prosperous blocks that are larger producer of wheat, rice and paddy. The nature of soil (slow to very slow permeability) facilitates rainfall conservation, water collection around canal sides or any construction site is very common and cultivation of rice and paddy gives many opportunities to create breeding sites for vectors.

Baran district is a dense outmigration zone as Baran sends 1.65 persons per ST household as migrants for employment purposes who usually work in mines and agriculture fields. Poverty and exclusion, along with social line firmly established in district and migration as a composite response to critical gaps (social, economic, and political), is evident in the lives of the poor (their own country "A Profile of Labor Migration from Rajasthan," 2014) [6].

Public Health must be a social responsibility, but the whole expectation to deliver health services are from the Medical and Health Department. The other departments of district administration function as delinked from public health needs. The public health engineering department has limited presence and its' deteriorating existence evidenced in the district. Choked Drains and Sewage water collection are visible even in urban areas of Baran town, representing the poor status of Public Health Engineering in District.

Health resources/infrastructure has block-to-block variations and its presence is inequitable, as infrastructure is largely concentrated in blocks reporting better vital indicator. The problem further exaggerated if state/district government machinery uses allocated resources inequitably.

SWOT ANALYSIS OF CURRENT PROGRAM APPROACH

Strengths

The free of monetary cost diagnostic services under MNJY and free of monetary cost medication provision under MNDY are the key strengths of current approach. The welfare nature of these medical services acknowledged among all the sections seeking curative services from Public funded healthcare institutions.

Weakness

The merging of vertical disease control program with general health services has resulted in reducing frequencies of vector control activities such as spraying, fogging, antilarval, and source reducing activities.

Beyond Institutions' limited presence, out-of-pocket expenses, unavailability of public transport in rural areas, and non-responsive primary level institutions create inequalities of access for most deprived sections.

Opportunities

There is need to look district as one unit and understand health distribution within district at sub-units of district. Further, demarcation of poor health, contributing factors, social, economic, political, cultural and ecological inter-linkages through epidemiological lens would enrich the conceptual understanding of Public health in district. The need of the hour is to expand coverage of existing well-conceptualized schemes (from the public health perspective) that are proving hit to the tip of the giant iceberg or remaining limited to a mere political stunt.

Threats

The private sector is utilizing the public sector health/medical infrastructures for their profit making, and the nature of public-funded institutions is changing from service provision to revenue generation due to commercialization and privatization of health.

Perceiving malaria or other communicable diseases mere a medical problem leads to medical interventions at mass level. The above-mentioned perception acts as significant threat to sustainability of public health program and leads to shrinking coverage of vertical national program using technical solutions irrationally or becoming more biomedicine centric.

The case management approach under current program is highly appreciated among medical professionals but treating/dealing the diagnosed cases is mere one part of the broader program approach [7]. The preventive aspect of program has remained subside and disappearing slightly in the current program approach.

The meager resource allocation for health in the district and its inequitable and inefficient utilization without considering the public health priorities influenced by technical agencies leads to complicate the problem. The next set of threats for districts' public health is fragmented administrative accountability, programmatic hurdles, and inbuilt corruption in public funded system.

WAY FORWARD

Soils nature, canal network, rice and paddy cultivation, higher proportion of socially marginalized population, poor status of public health engineering and high outmigration are the factors associated in disease transmission in the District. Break down in Malaria and other vector-borne diseases transmission chain is not possible practically due to various above-mentioned factors. Besides, this Malaria is not a disease suitable for elimination [8].

For considerable success to tackle Malaria (including other vector-borne diseases) as Public Health Problem, starting can be done with the revival and strengthening of capable Public Health Engineering as an intervention and preventive measure (in addition to existing program interventions) to relieve the sufferings of the most impoverished households. It will eventually contribute to Health Provision and control the vector population without any harmful effect on any individual or environment.

Treatment of Malaria cases alone would not worth the expenditure of resources if the nutritional and immune status of the population ignored. Thus, as a temporary and operational measure, strengthening and effective implementation of PDS to ensure food security for poorest households (with improvement in the image of existing Program in Community) would provide considerable relief for them and eventually lead to an improvement in nutritional status of the entire community.

Strengthening and Effective implementation of Employment Schemes (such as MGNREGA) and Pension Schemes would be crucial for improving living standards, eventually reducing morbidities and mortalities related to Malaria and other vector-borne diseases as overall socioeconomic development is crucial in tackling Malaria (including other vector-borne diseases) as a Public Health Problem in high or moderate transmission settings [9].

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