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Community Screening Program for Diabetes, Hypertension, Obesity and its Management through Ayurveda in Parali Block of Beed District.

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ABSTRACT: Background: The rising burden of non-communicable diseases (NCDs) like diabetes mellitus (DM), hypertension (HTN), and obesity poses a significant public health challenge in rural India. Integrated approaches, including traditional systems of medicine like Ayurveda, are being explored for sustainable management. Objectives: This study aimed to assess the prevalence of DM, HTN, and obesity in the Parali block of Beed district and evaluate the outcomes of a 12-month management program incorporating Ayurvedic principles. Methods: A community-based screening camp was conducted, assessing 6402 individuals. Anthropometric measurements, blood pressure (BP), and blood sugar levels (BSL) were recorded. A subset of diagnosed patients (HTN: n=149; DM: n=76; Comorbid DM&HTN: n=76) underwent a 12-month follow-up program involving lifestyle interventions and Ayurvedic management. Key outcome measures were changes in mean BP, BSL, and the proportion of patients achieving control. Results: The initial screening revealed a high prevalence of HTN (51.9%), DM (25.6%), and their comorbidity (22.4%). A majority (68%) were obese (BMI >30). Females constituted a slightly higher proportion (52.8%). The 70-79 age group had the highest disease burden. After 12 months, hypertensive patients showed a marked reduction in mean systolic BP (from 157.7 mmHg to 135.7 mmHg) and diastolic BP (from 94.8 mmHg to 85.4 mmHg), with 34% achieving control. Diabetic patients saw their mean BSL reduce from 199.3 mg/dl to 174.2 mg/dl, though only 23.7% achieved controlled levels. Patients with comorbid DM&HTN showed significant BSL improvement (from 193.7 mg/dl to 148.7 mg/dl; 30.2% controlled) but poorer BP control (only 18.5%).Conclusion: The integrative Ayurveda-based intervention demonstrated significant effectiveness in improving clinical parameters for HTN and DM over 12 months. However, the low control rates, particularly among comorbid and obese patients, underscore the need for more intensive, long-term, and targeted lifestyle strategies to sustain and improve outcomes.

KEYWORDS: Diabetes Mellitus, Hypertension, Obesity, Community Health

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INTRODUCTION:

Non-communicable diseases (NCDs), primarily diabetes, hypertension, and cardiovascular ailments, have emerged as a leading cause of mortality and morbidity globally, with a disproportionately high burden in low- and middle-income countries like India [1]. The epidemiological transition is acutely felt in rural India, where healthcare access is often limited, and lifestyle changes are rapidly contributing to the rise of these conditions [2]. Diabetes and hypertension frequently coexist, compounding the risk of complications such as renal failure, stroke, and ischemic heart disease [3]. Furthermore, obesity is a critical modifiable risk factor that exacerbates the incidence and severity of both conditions [4].The Parali block in the Beed district of Maharashtra represents a typical rural population undergoing this health transition. Conventional management of these NCDs often requires lifelong pharmacotherapy, which can be a financial and logistical burden. In this context, Ayurveda, India's ancient system of medicine, offers a holistic framework focusing on diet (Ahar), lifestyle (Vihar), and herbal formulations to manage health and disease [5]. This study reports on a community screening program and the subsequent management of identified cases of diabetes, hypertension, and obesity through an Ayurvedic paradigm.

Rationale of the Study

Despite national programs for NCD control, a significant gap exists in the delivery of sustainable and accessible care in rural settings. There is a growing interest in and evidence for the role of integrative and alternative medicine in chronic disease management [6, 7]. Ayurveda's emphasis on preventive and promotive health through personalized lifestyle modifications presents a viable, culturally acceptable, and potentially cost-effective strategy [8]. This study was conceived to document the baseline prevalence of these NCDs in a defined rural population and to systematically evaluate the real-world effectiveness of a structured Ayurveda-based intervention in a community setting, an area with limited robust research.

Objectives: This study aimed to assess the prevalence of DM, HTN, and obesity in the Parali block of Beed district and evaluate the outcomes of a 12-month management program incorporating Ayurvedic principles.

Results:

Table no. 1 Gender wise distribution of the patients in the Health Camp

Gender	Diabetes mellitus	Hypertension	DM & HTN	TOTAL
Male	795 (12.4%)	1522 (23.8%)	706 (11.0%)	3023(47.2%)
Female	847 (13.2%)	1798 (28.1%)	734 (11.5%)	3379 (52.8%)
Total	1642 (25.6%)	3320 (51.9%)	1440 (22.4)	**6402**

(Figures in the bracket indicates %)

Table no. 2 Age group wise Distribution of the Patients in the Health Camp

Age group	HTN	%	DM	%	Both	%	Total	%
20-29	42	1.27	24	1.5	9	0.62	75	1.2
30-39	290	8.73	169	10.3	92	6.38	551	8.6
40-49	681	20.51	374	22.8	270	18.71	1325	20.7
50-59	542	16.33	283	17.3	276	19.13	1101	17.2

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60-69	510	15.36	240	14.6	228	15.80	978	15.3
70-79	1083	32.62	472	28.8	507	35.14	2062	32.2
80-89	159	4.79	74	4.3	58	4.02	288	4.5
90-99	13	0.39	6	0.4	0	0.21	22	0.3
	3320	**100**	**1642**	**100**	**1440**	**100**	**6402**	**100**

Table no. 3 Mean, ±SD for BP, BSL of All the patients in the camp (n=6402)

	BP (Sys)	BP(Dia)	BSL (mg/dl)	Age
MEAN	150.6	91.3	154.7	59.5
±SD	35.4	24.4	70.7	15.0

Graph. 1 Mean, ±SD for BP, BSL of All the patients in the camp

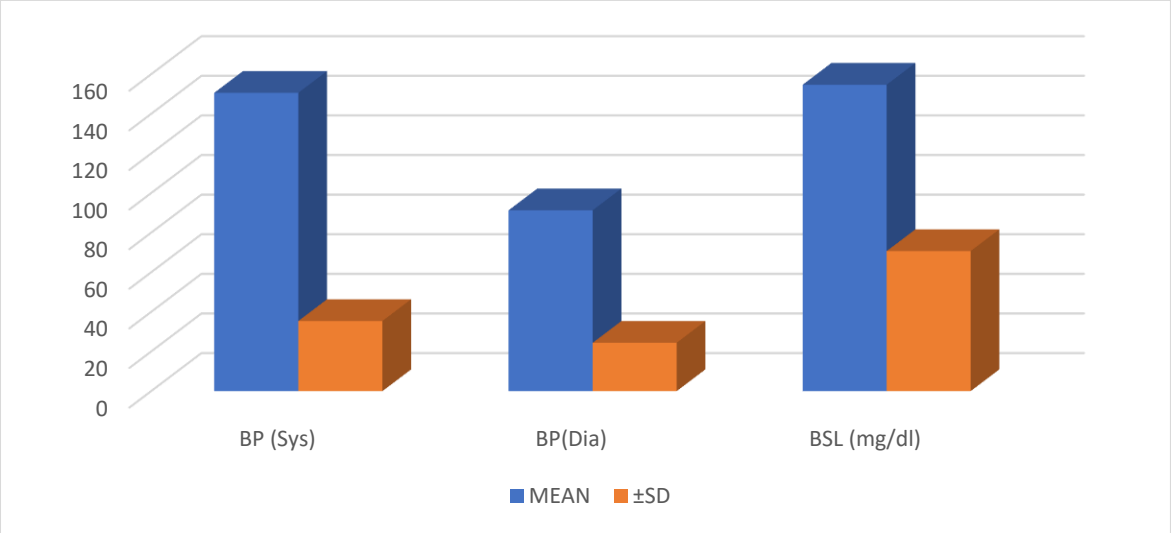

Table no. 4 Diabetic mellitus patients in the camp (n=1642)

Diabetic mellitus	BP (Sys)	BP(Dia)	BSL (mg/dl)	Age
MEAN	124.9	80.8	212.5	58.1
±SD	29.3	15.7	65.4	15.3

Graph. 2 Mean, ±SD for BP, BSL of Diabetic mellitus patients in the camp

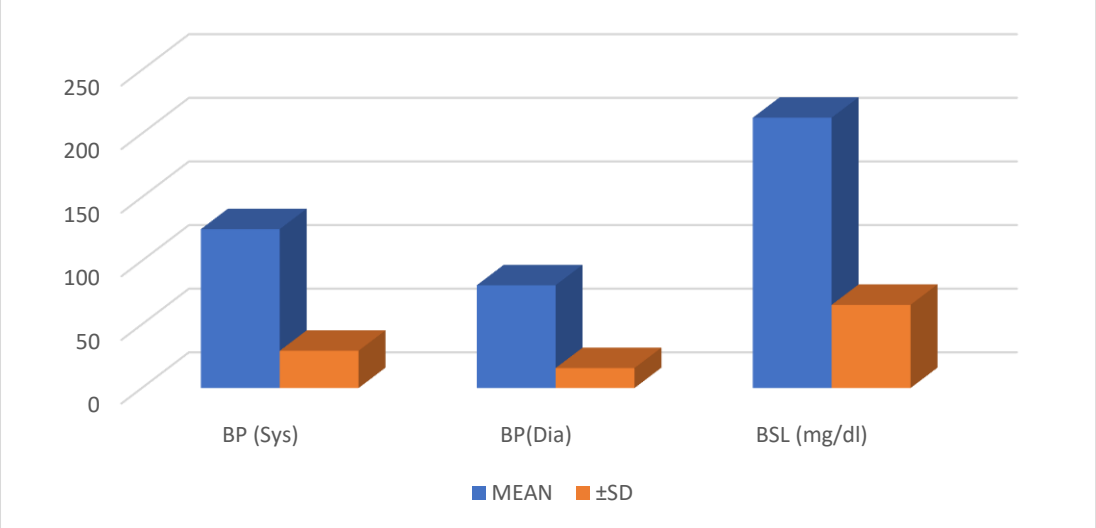

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Table no. 5 Hypertensive patients in the camp (n=3320)

Hypertension	Systolic BP mm of Hg	Diastolic BP mm of Hg	Age
MEAN	160.7	95.5	59.6
±SD	37.4	29.9	14.9

Graph. 3 Mean, ±SD for BP, BSL of 5 Hypertensive patients in the camp

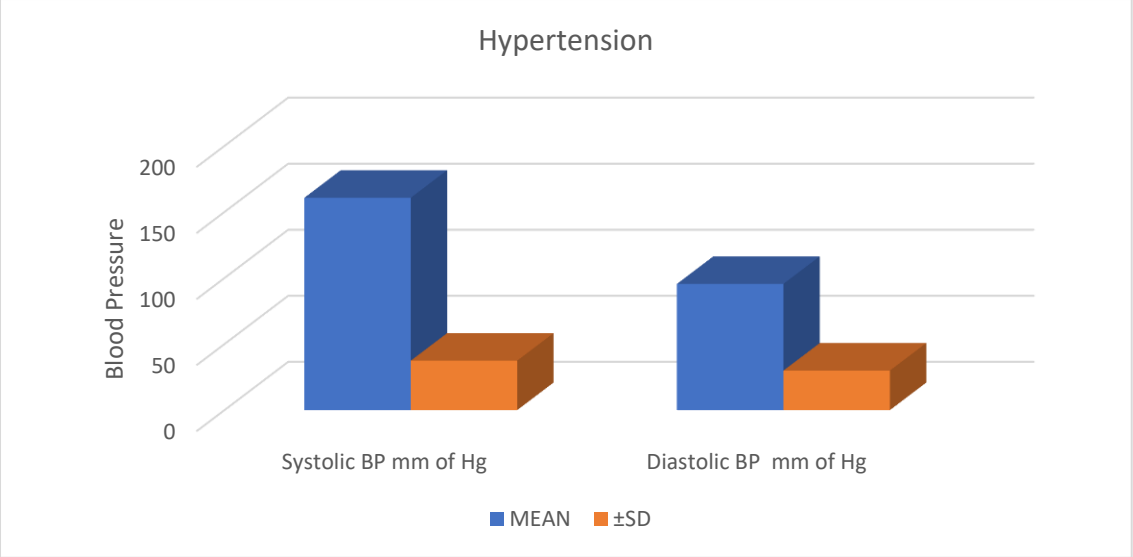
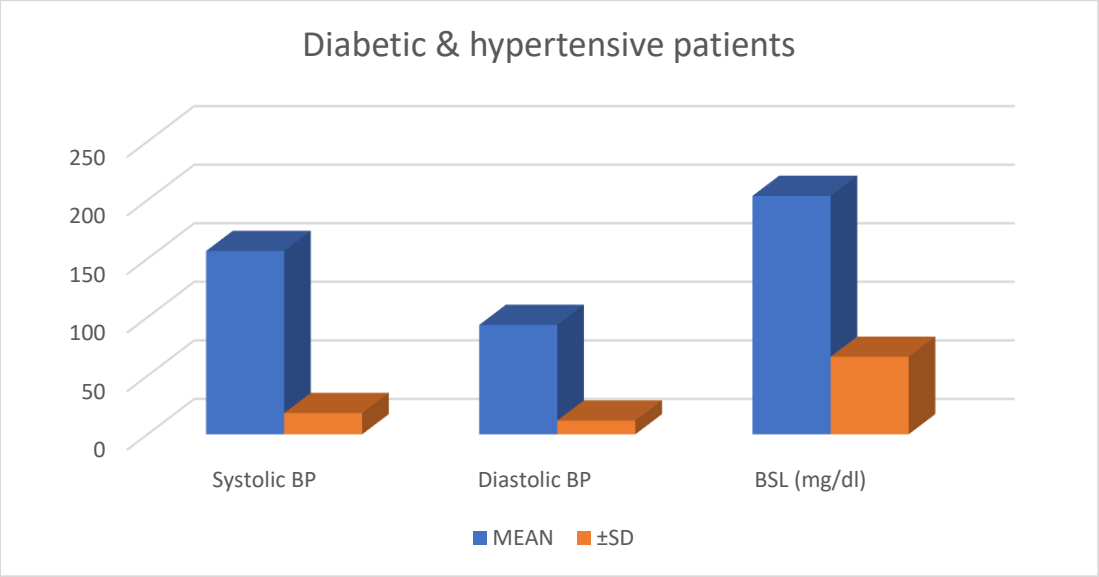


Table no. 6 Diabetic and Hypertensive patients in the camp (n=1440)

DM & HTN	Systolic BP	Diastolic BP	BSL (mg/dl)	Age
MEAN	156.5	93.4	203.6	60.7
±SD	18.1	11.7	66.2	14.3

Graph 4 Diabetic and Hypertensive patients in the camp



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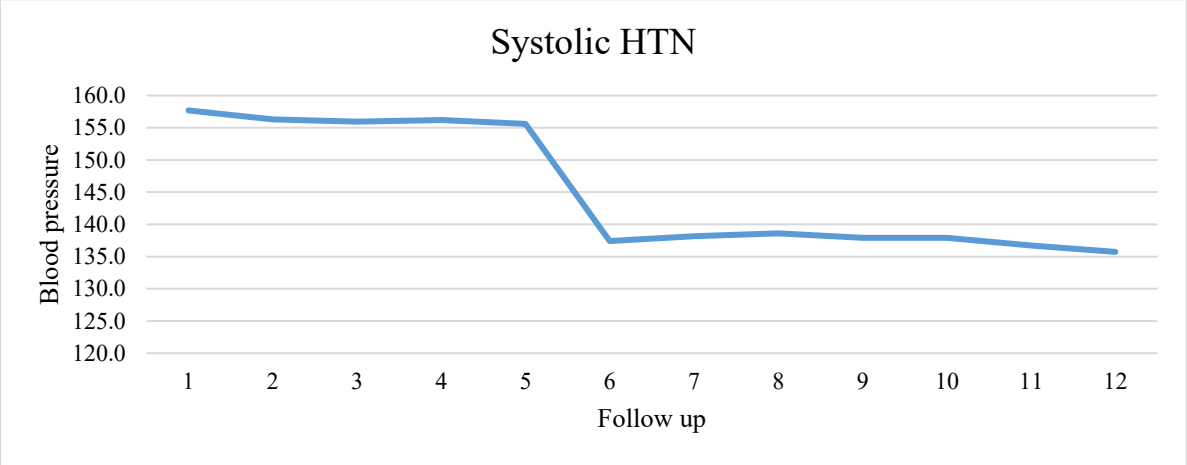
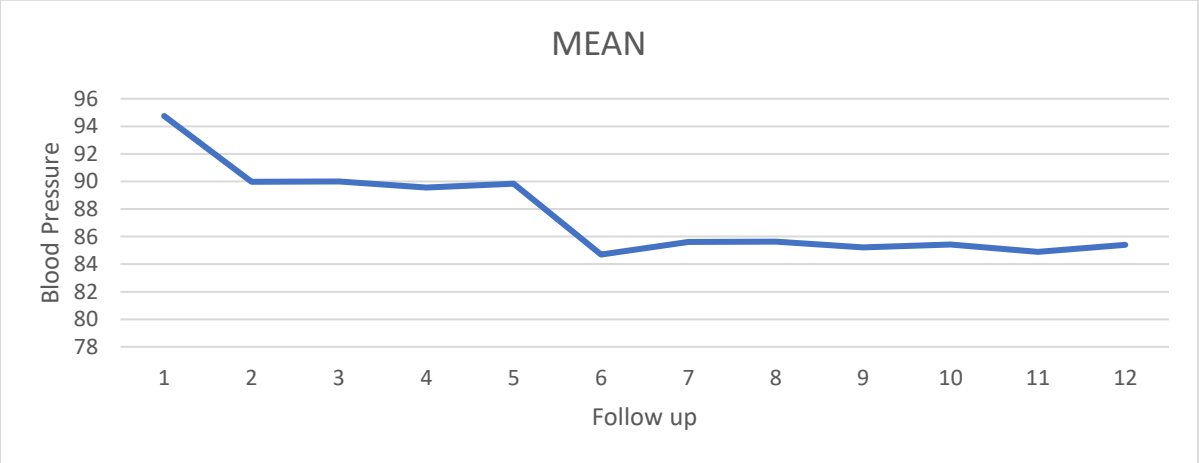
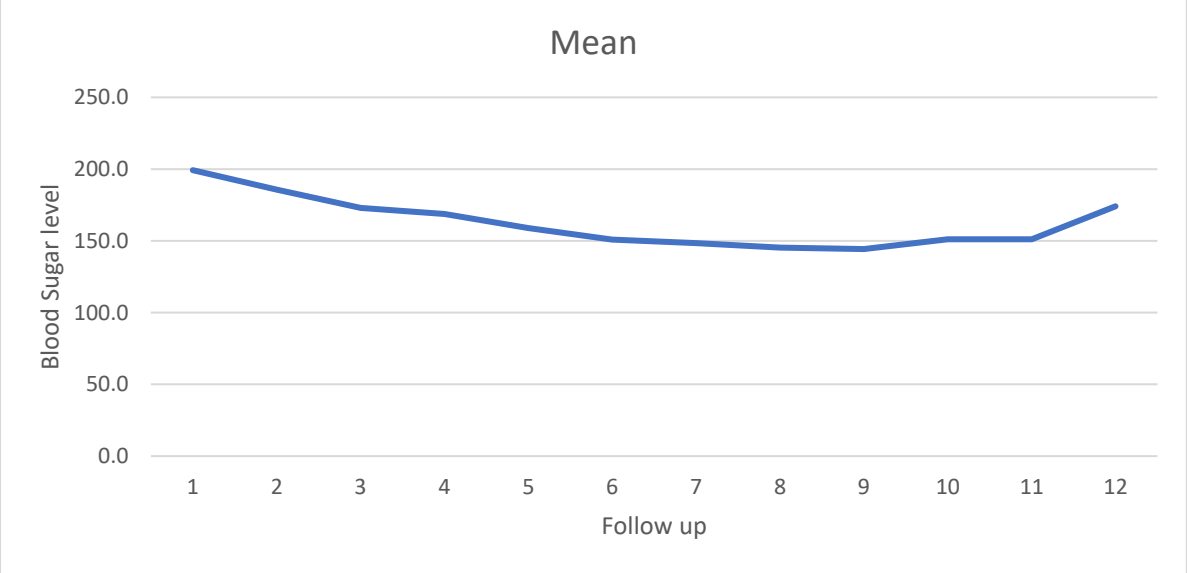
Graph . 5 Hypertension Systolic Blood Pressure



Graph 6 Hypertension Diastolic Blood Pressure



Graph. 7 Blood Sugar level on follow up



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DISCUSSION:

This community-based initiative successfully screened a large population (n=6402), revealing a high burden of NCDs in Parali block. The prevalence of hypertension (51.9%) and diabetes (25.6%) was alarmingly high, with over one-fifth of the screened population suffering from both conditions. The high rate of obesity (68%) identified is a key concern, as it is a well-established driver for both insulin resistance and hypertension [4, 9], creating a complex clinical scenario.The 12-month follow-up data demonstrates the promise of an Ayurvedic and lifestyle-oriented approach. The significant reduction in mean systolic BP (22 mmHg) and diastolic BP (approx. 9.3 mmHg) in hypertensive patients is clinically meaningful and translated to 34% of the followed-up cohort achieving controlled BP. This aligns with studies showing the efficacy of yoga, meditation, and specific herbal remedies in reducing blood pressure [10, 11]. For diabetic patients, the trajectory of mean BSL showed a consistent decline up to the 9th month (144.3 mg/dl) before a slight rise at the 12th month (174.2 mg/dl). This pattern suggests strong initial responsiveness to the intervention, but also highlights the challenge of long-term adherence to dietary and lifestyle changes. The final BSL control rate of 23.7% indicates that while the intervention was beneficial on a population-average level, a majority of patients still required more intensive management. The analysis of patients with comorbid DM and HTN provides critical insights. While this group experienced the greatest relative reduction in mean BSL (27.0%), their BP control rate was the lowest (18.5%). This indicates that achieving dual control is significantly more challenging, possibly due to the synergistic pathophysiology of the two diseases and the heightened impact of factors like obesity and chronic stress [12]. The data underscores that a "one-size-fits-all" approach is insufficient, and comorbid patients need more aggressive and multifaceted management plans.The variation in outcomes across different camps (e.g., 50% recovery in Natraj Rang Mandir vs. 20% in Islampur Bangla) suggests that local factors, such as community engagement, leadership, and adherence levels, play a crucial role in the success of such programs. The high prevalence of excessive body fat (79.4%) demands that future interventions incorporate more targeted and sustained weight management strategies, as even modest weight loss (5-10%) can dramatically improve glycemic and blood pressure control [13]. **Limitations:** This study has limitations, including the lack of a concurrent control group, potential variability in adherence to the Ayurvedic regimen, and the relatively small sample size for the follow-up cohort compared to the initial screening. The specific Ayurvedic protocols used were not detailed in the report, which limits the reproducibility of the study.

CONCLUSION: The Community Screening and Management Program in Parali Block successfully documented a high prevalence of diabetes, hypertension, and obesity and demonstrated that a 12-month management program grounded in Ayurvedic principles and lifestyle modification can yield significant improvements in clinical parameters. The findings affirm that lifestyle interventions are a cornerstone of managing these NCDs. However, the suboptimal control rates, particularly for blood pressure in comorbid patients and the pervasive challenge of obesity, indicate that more intensive, prolonged, and tailored strategies are necessary. Future programs should integrate robust dietary counseling, structured physical activity modules, and

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consistent long-term follow-up to consolidate and build upon the health gains achieved. An integrative model that combines the strengths of Ayurveda with contemporary public health practices holds significant promise for addressing the NCD epidemic in rural India.

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