ORIGINAL ARTICLE

Implementation of the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD) at the Primary Health Care Level in District Ghaziabad, Uttar Pradesh, India

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ABSTRACT

Background: Non-communicable diseases (NCDs) result in 41 million fatalities annually, constituting 74% of global mortality. According to ICMR State Level Disease Burden Initiative in 2016, NCDs accounted for 6.0 million deaths, constituting 62% of total mortality of that year in India. The National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS), renamed as National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD), has been implemented since 2010. **Aims and Objectives**: to assess the implementation status of NP-NCD at primary health care level in district Ghaziabad. **Methodology:** A cross-sectional study was done using a multi-stage sampling technique. 6 PHCs, 21 UPHCs, 42 subcentres, and 4 health and wellness centres were randomly selected, and staff (MOs, SNs, community health officers, ANMs, and ASHAs) were interviewed. The sample size was 580. **Results:** 60% of PHCs and UPHCs had good implementation status while 25% of subcenters and HWCs had good implementation status. The mean implementation scores were higher among PHCs and UPHCs (approximately 60%) compared to subcenters and HWCs (35-40). **Conclusion:** Implementation was better at PHC and UPHC levels compared to sub-centres and HWCs, which showed moderate performance, highlighting need for strengthened support at these levels.

KEYWORDS

NP-NCD, Implementation, Primary Health Care Level, Health and Wellness Centres, PHC, Subcentres, UPHC

INTRODUCTION

Non-communicable diseases (NCDs), such as coronary heart disease, cancer, stroke, diabetes, and chronic lung disease, result in 41 million fatalities annually, constituting 74% of global mortality. Of all NCD deaths, 77% are in low- and middle-income countries. If timely measures are not made for NCD prevention and control, the World Health Organisation (WHO) predicts that by 2030, there will be 55 million annual deaths from NCDs (1).

The study report "India: Health of the Nation's States" by the Indian Council of Medical Research (ICMR) in 2017 estimates that the percentage of deaths attributable to Non-Communicable Diseases (NCDs) in India went up from 37.9% in 1990 to 61.8% in 2016 (2,3).

The National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS) was launched in 2010 with a focus on health promotion, early diagnosis, management, strengthening infrastructure, human resource development, and referral services (4).

Some new diseases or disease categories have been incorporated into the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS), including ST-Elevation Myocardial Infarction (STEMI), Chronic Kidney Disease (CKD), and Non-Alcoholic Fatty Liver Disease (NAFLD) and the programme renamed as NP-NCD, "National Programme for Prevention and Control of Non-Communicable Diseases," in May 2023 (5,3).

Aims and Objective: to assess the implementation status of NP-NCD at the primary health care level in district Ghaziabad.

MATERIAL & METHODS

Study type and design: It was a cross-sectional study.

Study setting: The study was carried out in urban and rural primary health care facilities in District Ghaziabad, including primary health centres (PHCs), urban primary health centres (UPHCs), subcentres (SCs), and health and wellness centres (HWCs).

Study Population: The study participants were medical officers (MOs), staff nurses (SNs), community health

officers (CHOs), auxiliary nurse midwives (ANMs), and accredited social health activists (ASHAs).

Study duration: two years with period of data collection of six months between March 2024 to September 2024

Sample size: As per the information from the CMO office, we found that the total number of healthcare providers relevant for our study was 1389.

Strategy for data collection: Using the multistage sampling technique, rural and urban distribution was done using probability proportional to size. In the first stage, 6 PHCs and 21 UPHCs were included by random selection, and one MO and one SN were interviewed in each centre. The second-stage units for the study were sub-centre/health and wellness centre staff (community health officers, ANMs, and ASHAs) under rural PHCs and ANMs and ASHAs under urban PHCs. We distributed the remaining sample size of 526 units to these staff categories using PPS sampling. This resulted in a random selection of 37 ANMs, 39 CHOs, and 265 ASHAs from sub-centres/health and wellness centres under rural PHCs and 82 ANMs and 103 ASHAs from urban PHCs.

A scoring tool for assessing the implementation was used. It consists of various components of health centres, like appearance, basic amenities, availability of furniture, instruments, equipment, human resources available, register & report maintenance, IEC material availability, outreach sessions conducted, and services provided. For each fulfilled criterion, a score of 1 was provided. The total scores for PHCs and UPHCs were 72, and for subcenters and HWCs, it was 64.

The status was determined based on the scoring as follows:

Implementation Status	For PHCs & UPHCs	For subcentres & HWCs
	Total Score (72)	Total Score (64)
Good	≥ 62	≥ 40
Adequate	52-61	34-39
Inadequate	31-51	21-33
Poor	≤ 31	≤ 20

Ethical consideration: A written informed consent was obtained from the participants. Ethical approval for the study was obtained from the Institutional Ethics Committee (letter no. F.No. SU/R/2023/2489[62]).

Informed consent: A written informed consent was taken from all the participants.

Data analysis: The data was obtained and imported into SPSS software (IBM SPSS Statistics, 26th version) for analysis. ANOVA tests were used to determine the mean difference between PHC, UPHC, SUB-CENTRE, and HWCs.

RESULTS

Table 1 outlines the implementation status of NP-NCD based on total scores across different health centre types in District Ghaziabad. Among PHCs, 66.66% were classified as having good implementation (≥62), while 61.90% of UPHCs also fell into this category. A smaller proportion of PHCs showed adequate (16.66%) and inadequate (16.66%) implementation. None were rated poor. For sub-centres, only 26.19% achieved good status (≥40), with the majority classified as adequate (47.61%) and the remaining 26.19% as inadequate. Among HWCs, 25% were rated good and 75% adequate, with none falling into the inadequate or poor categories.

Table 1: Implementation status of NPNCD in health centres at primary care level in district Ghaziabad.

Total Score (72)	Implementation Status	PHC (n = 6)	UPHC (n = 21)
≥ 62	Good	4 (66.66%)	13 (61.90%)
52-61	Adequate	1 (16.66%)	8 (38.09%)
31-51	Inadequate	1 (16.66%)	0 (0.0%)
≤ 31	Poor	0 (0%)	0 (0%)
Total Score (64)	**Implementation Status**	**Subcentres (n = 42)**	**HWC (n = 4)**
≥ 40	Good	11 (26.19%)	1 (25%)
34-39	Adequate	20 (47.61%)	3 (75%)
21-33	Inadequate	11 (26.19%)	0 (0.0%)
≤ 20	Poor	0 (0%)	0 (0%)

Table 2 summarises the overall mean scores of health centres in district Ghaziabad based on total possible scores. PHCs and UPHCs performed similarly, with mean scores of 61.83/72 (SD = 12.19) and 62.00/72 (SD = 3.98), respectively. Sub-centres and HWCs scored comparatively lower, with mean scores of 37.80/64 (SD = 5.76) and 39.25/64 (SD = 4.57), respectively. The implementation scores showed the highest consistency among UPHCs (SD = 3.98), indicating uniform service delivery, whereas PHCs exhibited the greatest variability (SD = 12.189), reflecting uneven implementation performance across centres. Sub-centres and HWCs showed moderate variability in scores.

Table 2: Mean implementation score of the health centres at primary care level in district Ghaziabad.

Type of Health Centres (n = 73)	Mean Score	S.D.
PHC (n = 6)	61.83/72	12.189
UPHC (n = 21)	62.00/72	3.98
Sub centres (n = 42)	37.80/64	5.760
HWCs (n = 4)	39.25/64	4.573

Table 3 shows the mean scores for infrastructure related to general appearance, availability of basic amenities, and furniture across health centres in district Ghaziabad. UPHCs (M = 19.14, SD = 1.77) and PHCs (M = 18.67, SD = 4.63) recorded higher scores compared to sub-centres (M = 12.79, SD = 2.68) and HWCs (M = 13.50, SD = 1.29). The range at 95% CI was highest for PHCs, while it was minimum for UPHCs and SCs. This shows that PHCs had a variable implementation for infrastructure across the district, while UPHCs and SCs were consistent in their implementation of infrastructure across Ghaziabad. This difference was also found to be statistically significant (F value = 32.038, p value = <0.001).

Table 3: Mean scores for infrastructure among health centres at primary care level in district Ghaziabad.

Type of centre (n)	Mean±S.D.	Range at 95% Confidence Interval (CI)	F-value, p-value
PHC (6)	18.67±4.633	13.80 – 23.53	32.038, <0.001
UPHC (21)	19.14±1.769	18.34 – 19.95	
SUB-CENTRE (42)	12.79±2.683	11.95 – 13.62	
HWC (4)	13.50±1.291	11.45 – 15.55	

Table 4 presents the mean scores for the availability of medical equipment and instruments used for screening and diagnosing NCDs across health centres in district Ghaziabad. PHCs (M = 14.67, SD = 1.97) and UPHCs (M = 14.62, SD = 1.16) demonstrated higher availability compared to HWCs (M = 10.50, SD = 2.08) and sub-centres (M = 10.48, SD = 1.67). A higher SD along with a higher range for HWC for this parameter indicates variability in implementation across HWC in the district; the same is true for PHCs. The differences were statistically significant (F = 38.813, p < 0.001), reflecting disparities in the availability of essential diagnostic tools among the various facility types.

Table 4: Mean scores for availability of medical Equipment and Instruments used for screening / diagnosis of NCDs at the health centres in district Ghaziabad.

Type of centre (n)	Mean±S.D.	Range at 95% Confidence Interval (CI)	F-value, p-value
PHC (6)	14.67±1.966	12.60 – 16.73	38.813, <0.001
UPHC (21)	14.62±1.161	14.09 – 15.15	
SUB-CENTRE (42)	10.48±1.671	9.96 – 11.00	
HWC (4)	10.50±2.082	7.19 – 13.81	

Table 5 shows the average scores of different health centres based on how well they maintained registers and reports, used IEC materials, conducted outreach sessions, and provided services. Primary Health Centres (PHCs) had the highest mean score (15.1), followed by Urban PHCs (14.1), Health and Wellness Centres (12.2), and Sub-Centres (10.9). The range of scores at 95% confidence interval indicates that PHCs had the widest variation, while sub-centres had a narrower range. The F-value (13.533) and p-value (0.000) from ANOVA indicate that the differences in mean scores among the centres are statistically significant, meaning the type of health centre influences the overall performance in these areas.

Table 5: Mean scores for availability of IEC material, maintenance of Registers and Reports, outreach sessions and services related to NCDs in health centres in district Ghaziabad.

Type of centre (n)	Mean±S.D.	Range at 95% Confidence Interval	F-value, p-value
PHC (6)	15.1 ± 2.858	12.17 - 18.17	13.533, <0.001
UPHC (21)	14.1 ± 2.136	13.22 - 15.16	
SUB-CENTRE (42)	10.9 ± 2.235	10.23 - 11.63	
HWC (4)	12.2 ± 1.708	9.53 - 14.97	

DISCUSSION

The study revealed significant variation in the implementation status of the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD) across different levels of primary healthcare facilities. Implementation was notably better at the level of Primary Health Centres (PHCs) and Urban Primary Health Centres (UPHCs), with the majority of these facilities achieving a "Good" status (Table 1). Specifically, 66.66% of PHCs and 61.90% of UPHCs were rated as "Good," while none were categorised as "Poor." In contrast, sub-centres and health and wellness centres (HWCs) demonstrated more variable implementation, with a considerable proportion achieving only "adequate" or "inadequate" ratings, indicating inconsistencies and gaps at these levels.

This was further supported by mean implementation scores (Table 2), where UPHCs and PHCs recorded high averages (62.00 and 61.83, respectively), compared to significantly lower scores in Sub-Centres (37.80) and HWCs (39.25). The greater standard deviation observed among PHCs suggested variability in implementation, while the relatively narrow range for UPHCs indicated more uniform implementation. These findings reflected the relatively better resourcing and administrative support available in urban and better-established facilities.

Analysis of individual implementation domains revealed statistically significant differences across facility types. In terms of infrastructure and amenities (Table 3), UPHCs and PHCs again outperformed Sub-Centres and HWCs, with mean scores of 19.14 and 18.67, respectively (F = 32.038, p < 0.001). Similarly, availability of medical equipment and instruments (Table 4) was substantially higher in PHCs and UPHCs (mean = 14.67, 14.62, respectively) than in Sub-Centres (10.48) and HWCs (10.50), with a highly significant difference (F = 38.813, p = <0.001). These results pointed to better logistical and infrastructural readiness in higher-tier facilities.

Service delivery indicators such as maintenance of registers, IEC material availability, and outreach sessions and services provided at the centres (Table 5) also followed the same pattern. PHCs and UPHCs had significantly higher mean scores (15.1 and 14.1, respectively) compared to Sub-Centres (10.9) and HWCs

(12.2), with a significant ANOVA result ($F = 13.533$, $p < 0.001$), indicating stronger operational performance in better-equipped facilities.

Overall, the data indicated that while PHCs and UPHCs were largely successful in implementing the NP-NCD program, significant implementation challenges remained at the sub-centre and HWC levels.

Conclusion

While over 60% of PHCs and UPHCs demonstrated good implementation, only 26% of sub-centres and 25% of HWCs reached this level. A significant portion of peripheral centres fell into adequate or inadequate categories. PHCs and UPHCs consistently scored higher in service delivery, outreach sessions, and overall implementation status of NCD services compared to sub-centres and HWCs.

Higher-level facilities (PHCs and UPHCs) had better infrastructure, basic amenities, and availability of screening equipment than sub-centres and HWCs. Sub-centres and HWCs showed lower scores in maintaining records and availability of IEC materials, which are critical for awareness, monitoring, and continuity of care.

Recommendation

The findings of this study underscore the need for targeted investments, capacity building, and improved supervisory mechanisms at the peripheral level to ensure equitable and effective program implementation across all tiers of the health system.

Limitation of the Study

The study was limited to only one district of western Uttar Pradesh. So, the results might not be generalisable to other states.

Relevance of the Study

No previous study has been done to assess the implementation of the programme and this study has given important insights on the status of implementation of the programme in a district of western UP.

Authors Contribution

All authors have contributed equally.

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Nil

Conflict of Interest

There are no conflicts of interest.

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Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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