ORIGINAL ARTICLE

Health facility readiness, facilitators, and implementation challenges of package of essential non-communicable disease program in selected municipality of Lalitpur district: a mixed method study

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Abstract

Introduction: The global burden of non-communicable diseases constitutes a major public health challenge as well as a serious threat to social and economic development. The Nepal package of essential non-communicable disease (PEN) began in October 2016 with two pilot districts. The program was expanded to 77 Districts of Nepal by the year of 2021.The Program covers major NCDs like cardiovascular disease (CVD), diabetes, cancers (Breast and Cervical) and chronic respiratory diseases. This study assessed its status in Lalitpur district, Nepal. Aim of the study was to assess the health facility readiness, facilitators and implementation challenges of PEN program.

Method: A cross-sectional design with concurrent triangulation mixed method was used. All the primary government health facilities of Lalitpur metropolitan city and Mahalaxmi municipality were included in study. Duration of the study was one month. Readiness for PEN program was assessed using pre-validated tools. By using purposive sampling for qualitative data and it was analyzed by using Braun and Clarke's six steps thematic analysis.

Result: The overall readiness index for PEN services was 2526(71.4%) but it was less than 70%(not read) in Lalitpur metropolitan city and more than 70% in the Mahalaxmi municipality. Nearby tertiary hospital, positive leadership and availability of medicines were identified as facilitators while lack of trained health workers, unavailability of equipments and essential medicines were considered as major implementation challenges for the program.

Conclusion: Despite of 71.4% overall readiness for PEN services, disparities exist between municipalities. Facilitators such as nearby tertiary hospital and positive leadership contrast with challenges like a shortage of trained health workers and essential supplies. Addressing these disparities and challenges is crucial for successful implementation of PEN program.

Keywords: Chronic Respiratory Disease (CRD), Cardiovascular Disease (CVD), Non-Communicable Disease (NCD), Package of Essential Non-Communicable Diseases (PEN)

INTRODUCTION

The global burden of non-communicable diseases (NCDs) constitutes a major public health challenge as well as a serious threat to social and economic development now and in the future.[1] NCDs are the main causes of mortality and disability worldwide, accounting for 41 million fatalities (71% of all deaths) every year, with 77% happening in low- and middle-income countries (LMICs).[2] World health organization (WHO) has identified a set of effective NCD preventive and control activities and has developed tools like Package of essential NCD interventions (WHO PEN) which provides basic clinical protocols for integrated prevention and management of CVD, diabetes, chronic respiratory diseases, cancer in primary health care (PHC) within low-resource settings.[3]

Nepal has experienced a shift in disease pattern, from a high to a low burden of infectious diseases, and increases in the burden of NCDs.[4] The Nepal PEN protocol I, II, and concept note were prepared and approved in June 2016, and the program began in two pilot districts (Ilam and Kailali) from the primary health facilities in October 2016. The PEN program has been expanded to 77 districts of the Nepal by 2021.[5] Therefore, this study aims to assess the health facility readiness, facilitators and implementation challenges of PEN program in Lalitpur district.

METHOD

A cross-sectional study design with concurrent triangulation mixed method study was conducted within two municipalities of Lalitpur district namely Lalitpur Metropolitan City and Mahalaxmi Municipality. Duration of the study was one month (Sep 1, 2023 to sep 30, 2023). The quantitative phase was done with a survey questionnaire of 30 health facilities (i.e., 20 from Lalitpur metropolitan and 10 from Mahalaxmi Municipality), using a structured face-to-face interview with PEN focal person. The qualitative phase involved in-depth interviews (IDI) with six health workers (PEN focal person) from 6 health facilities (2 Female and 4 Male) using IDI guidelines. The quantitative study measured the readiness of health facilities to provide PEN services. The qualitative study explored the in-depth experiences of facilitators and the implementation challenges for providing PEN services. Purposive sampling was used to select the local level and participants of qualitative study. The tools were developed and finalized after literature review and feedback from peers and experts. The quantitative tool was based on the WHO-SARA (Service Availability and Readiness Assessment) tool[6], WHO-HHFA (Harmonized Health Facility Assessment)[7], HP-MSS Nepal (Health Post Minimum service standard)[8] and PEN protocol.[9]

The dependent variable was the readiness index (ready=1 and not-ready=0) which was created using a cutoff value of 70% based on WHO SARA (Service availability and readiness assessment) guideline. Background variables included were availability of the National PEN protocol, availability of trained health workers, equipment availability, diagnostic and available services, availability of essential medicine and commodities, and minimum parameters of recording and reporting. Mediating variables included were type, location, the total number of staff and health facility operation management committee (HFOMC) meetings held and physical structure of health facilities. In addition, the age of the PEN focal person, sex of the focal person, working experiences, and higher qualification of the focal person were also included as explanatory variables.

Quantitative data was collected in the KOBO tool, which was imported and cleaned in MS Excel, Statistical analysis was done using Easy R 1.64 and STATA 13.0. For the qualitative data, interviews were recorded on a mobile phone, kept safely in a password-protected laptop, and transcribed/translated on the same day. Information obtained from interviews was converted into 'txt' format and then imported into the RQDA package of R software for coding and categorization. For the qualitative analysis, thematic analysis was performed following Braun and Clarke's six-step method.[10]

Written consent of the participants was taken after providing them with an information sheet about the study before collecting data. The study was part of the larger study for which ethical approval was obtained from IRC-PAHS (Ref: PHP2312011821).

RESULT
Quantitative findings

A total of thirty health facilities, all from urban area were included in this study. All of the health facilities were from urban locations. Among them 20 were from Lalitpur metropolitan, and 10 were from Mahalaxmi municipality. Plethora of health facilities like 10 Health Posts, 10 Basic Health Service Centers, 9 urban health centers, and 1 primary health center were taken for our study. Most of these 29 (97%) only provide outpatient department (OPD) services and inpatient services were provided by 1(3%) provide both OPD and inpatient services to the people. Only 9 (30%) health facilities had their own building whereas 13 (43%) health facilities were running on buildings with rent and 8 (27%) health facilities were in public buildings. About 57% of respondents were male. Mean age of the service providers (PEN focal person) was 34.7 years (SD=6.4) with a mean working experience of 9 years (SD=2.3). Among staffs, 14(47%) had completed the certificate level, 8 (27%) completed a bachelor's degree, 7(23%) completed the technical SLC level and only 1 (3%) of the respondent (PEN focal person) completed a master's degree in health sciences.

The median number of staffs at 30 health facilities was 3, where 25 (83%) health facilities had at least one trained

health worker for the PEN program who provided the NCDs related services. Only 12(40 %) of the health facilities had at least four rooms and 18(60%) of the health facility conducted less than five HFOMC meetings in the last fiscal year (Table 1).

The overall readiness score of the PEN program for both local level to provide the PEN program was found to be 71.4% (Table 2), in which breast cancer screening services got highest score i.e., 90.1 followed by cervical screening services and diabetes management services attained score of 85.3 and 73.5 respectively. While CVD sand CRD screening and management services did not cross the minimum threshold (70%) for service readiness. The overall readiness score for Lalitpur metropolitan city was found 68.5, where 76.7% (23) health facilities exhibited ready to provide PEN services. Readiness of Lalitpur metropolitan city to manage diabetes was 68.1, CVD management 57.6, CRD management 67.5, Cervical cancer screening 82.9, Breast cancer screening 94 and recording and reporting 82.8(Fig 1). In Lalitpur metropolitan city Diabetes screening and management, CVD screening and management and CRD screening and management services were not attained the minimum threshold to be ready to provide PEN services i.e., 70%.

The overall readiness index of Mahalaxmi Municipality to provide PEN services was 77.1 where the readiness to manage and screening diabetes was 83.1, CVD screening and management 69.6, CRD screening and management 72.7, Cervical cancer screening 90, while Breast cancer screening and recording and reporting obtained full score i.e., 100 (Fig 2). In Mahalaxmi municipality Only the CVD screening and management services did not achieve the cutoff of 70%.

The bivariate analysis of the mediating variable and dependent variables
The bivariate analysis of the mediating variable results in only 2 variables stated that are significant with the overall readiness index of the health facilities they are the number of trained health workers available in the health facility and the number of HFOMC meetings held in the last fiscal year and the p-value is 0.0057 and 0.024 respectively (Table3).

The bivariate analysis of the background variables stated that all the domains were significant namely availability of guidelines (p-value 0.000307*), trained health workers (p-value-0.0000796*), diagnostic and services (p-value 0.0157*), equipment (p-value 0.006661*), commodities and medicines (p-value 0.00128*) for the Diabetes management (Table 4). In cardiovascular disease management, only two domains i.e., availability of guidelines (p-value 0.000884*) and trained health workers (p-value 0.000307*) were found to be significant and the rest of the domains did not found significant with the overall readiness (Table-4).

Table 1. Basic characteristics of health facilities and respondents (N= 30)

Characteristics	Frequency (%)	Remarks	Characteristics	Frequency (%)	Remarks
Facility Location Urban Rural	30(100%) 0 (0%)		**Qualification of the service provider** TSLC Certificate level Bachelor Masters & above	7(23.33%) 14(46.67%) 8(26.67%) 1(3.33%)	
Types of health facility BHSC HP PHC UHC	10(33.3%) 10(33.3%) 1(3.33%) 9(30%)		**Working experience of service provider** Nine Years M than Nine Years	18(60%) 12(40%)	Mean (9) SD (± 2.3)
Types of service Available OPD OPD & IPD	29(96.67%) 1(3.33%)		**No. of Staff in health facilities** ≤3 staff > 3 staff	18(60%) 12(40%)	Median (3) IQR (2.8)
Ownership of Health Facility Own Building Public Building On Rent	9(30.00%) 8(26.67%) 13(43.33%)		**No. of Staff trained on PEN program** At least one Not Available	25(83.33%) 5(16.67%)	
Sex of the Service provider Female Male	13(43.33%) 17(56.67%)		**No. of rooms available in HF** < 4 Rooms ≥ 4 Rooms	18(60%) 12 (40%)	Median 3.5 IQR (3.73)
Age of the service provider ≤35 Year >35 Year	13(43.33%) 17(56.67%)	Mean(34.7) SD (± 6.4)	**No. of HFOMC meeting held in last FY** < 5 Meetings ≥ 5 Meetings	18(60%) 12(40%)	Mean (5) SD (±3.2)

Table 2. Domain-wise overall readiness index of both municipalities

Categories	Diabetes	CVD	CRD	Cervical cancer	Breast cancer	Recoding and Reporting
National Guidelines	73.3	70	70	80	76.7	
Trained Health staff	83.3	73.3	80	76.7	80	
Diagnostics and services	76.6	55	70.9	91.1	70	
Equipments	67.5	100	56.6	83.3	100	88.5
Commodities and medicines	72.5	31.3	38.8	85.3	100	
Total Score	**73.5**	**56.9**	**54.6**	**85.3**	**90.1**	
Overall Readiness score of both Municipalities	**71.4**					
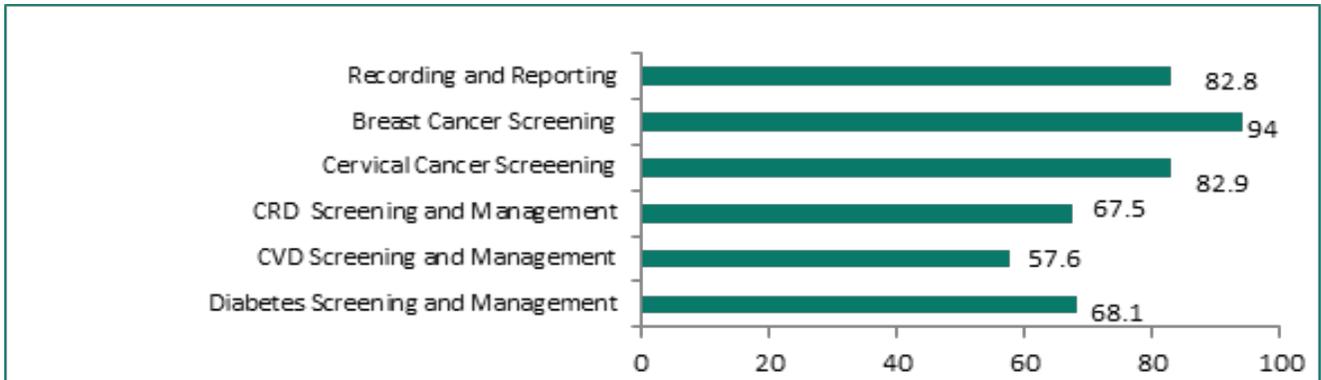
Figure 1. Domain-wise readiness of Lalitpur Metropolitan City
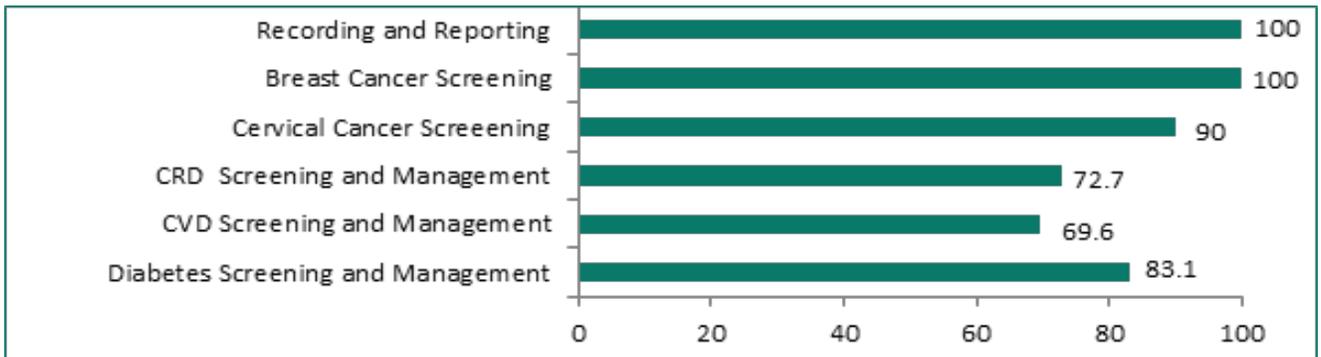
Figure 2. Domain-wise readiness of Mahalaxmi Municipality

In the chronic respiratory diseases, which include asthma and COPD, there two domains were seen as significant with overall readiness index i.e., availability of guidelines (p-value 0.000884) and trained health workers (p-value 0.000825) (Table 4). The cancer services include cervical cancer and breast cancer. In which four domains; namely availability of guideline (p-value 0.0157*), trained health workers (p-value 0.0331*), diagnostic and services (p-value 0.0157*) and equipment (p-value 0.0157*) found significant. Three domains of breast cancer were found significant namely availability of guideline (p-value 0.00269*), trained health worker (p-value 0.000825*) and diagnostic and services (p-value 0.0157*). For the recording and reporting four domains were recording database (register/digital) (p-value 0.00269*), availability of register for treatment of a diagnosed patient (p-value 0.00269*) (Table 5).

Qualitative analysis
Qualitative analysis based on Braun and Clarke's six step thematic analysis identified six themes namely diabetes management, chronic respiratory disease management, cardiovascular disease management, cancer (Breast and cervical) screening and management, Recording and reporting, and Facilitators/Barriers to providing the PEN program

Triangulation of qualitative and quantitative findings
Convergent Finding
Quantitative finding identified the number of health workers and HFOMC meeting found to be significant and the qualitative data aligns with these findings with table 3.
"We all paramedics have received the training on PEN program". **IDI 6**

"We received training from FPAN (Family Planning

Table 3. Bivariate analysis of mediating variable and dependent

Basic Variables	Overall Readiness Index of the Health Facility		P-value (fisher exact)
	Ready (≥ 70%) N (%)	Not Ready (<70%) N(%)	
Types of health facility			
BHSC	7 (70%)	3 (30%)	
HP	9 (90%)	1 (10%)	
PHC	1 (100%)	0	
UHC	6 (66.7%)	3 (33.3%)	0.66
Types of service available			
OPD	22 (75.9%)	7 (24.1%)	
OPD and IPD	1 (100%)	0	1
Sex of Respondent			
Female	9 (69.2%)	4 (30.8%)	
Male	14 (82.4%)	3 (17.6%)	0.66
Ownership of the building			
Own Building	7 (77.8%)	2 (22.2%)	
Public Building	7 (87.5%)	1 (12.5%)	
On Rent	9 (69.2%)	4 (30.8%)	0.85
Qualification of the Respondent			
TSLC	5 (71.4%)	2(28.6%)	
Certificate level	11 (78.6%)	3 (21.4%)	
Bachelor	7 (87.5%)	1 (12.5%)	0.40
Masters or above	0	1 (100%)	
No. of Health worker trained on PEN			
None	1 (20%)	4(80%)	
At least 1	22 (88%)	3(12%)	**0.0057***
No. HFOMC meeting held in last FY			
< 5 meeting	11 (61.1%)	7 (38.9%)	
≥ 5 meeting	12 (100%)	0	**0.024***
No. of rooms available in HF			
< 4 Rooms	13 (72.2%)	5 (27.8%)	
≥ 4 Rooms	10 (83.3%)	2 (16.7%)	0.669

Association of Nepal), and the district health office also provide support. Now services are available on PEN program" - **IDI 4**

"We are trained but we don't have equipment to diagnose the diseases under PEN program and lacks sufficient drugs for CRD services"- **IDI 3**

"We have recording registers, computers and skilled humans to record and report the services"-**IDI 2**

In the recording and reporting domain quantitative data was found significant with the availability of recording and reporting tools for the PEN program which aligns with qualitative findings;

"Digital recording system (EHIRRS) is launched recently and it helps us to make a report easily and we can also track a data when required"- **IDI 3**

"We were requested to ward for the budget to buy medicines and they were allocated budget as per our request which makes us easier to run a program otherwise, it's difficult for us even to buy a glucometer and strips " - **IDI 4**

Divergent Findings
The study result did not find divergent findings.

Expansive findings
The study on the readiness of health facilities was done based on PEN protocol but in qualitative analysis, some health workers illuminated it was important to provide the services where the PEN program does not recommend these services at primary health facilities.

"For the care of patients, we required one bed for the daycare service. Sometimes, we do not have a place to keep 2/3 patients and there is a shortage of nebulizers. So, it's a bit challenging to run the PEN program effectively."-**IDI 5**

"..................if there's a GP (MDGPE doctors) at health facility, it would be easier to provide PEN-related services effectively" - **IDI 4**

Facilitators and implementation challenges
Many of the respondents illuminated that will of the leadership, helping hands and municipality are playing a facilitating role to implement the PEN program efficiently.
"The political leaders are positive towards health services; if we required anything, we can ask for it. "**IDI 2**

"The municipality and the KIST Hospital are supporting us by providing required equipment." **IDI 5**

"Now, we have medicines and tools for recording and

Table 4. Bivariate analysis between background variable and dependent variable

Background Variables		Overall Readiness Index of the Health Facility		p-value* (fisher exact)
		Ready (≥ 70%)	Not Ready (<70%)	
Diabetes				
Availability of guidelines	Yes	21(95.5%)	1(4.5%)	0.000307*
	No	2(25%)	6(75%)	
Trained health worker	Yes	2295.6%)	1(4.4%)	0.0000796*
	No	1(14.2%)	6(85.8%)	
Diagnostics and services	Yes	21(87.5%)	3(12.5%)	0.0157*
	No	2(33.3%)	4(66.7%)	
Equipment	Yes	20(91%)	2(9%)	0.006661*
	No	3(37.5%)	5(62.5%)	
Medicines and commodities	Yes	23(88.4%)	3(11.6%)	0.00128*
	No	0	4(100%)	
Cardiovascular Disease				
Availability of guideline	Yes	20(95.2%)	1(4.8%)	0.000884*
	No	3	6	
Trained health worker	Yes	21(95.5%)	1(4.5%)	0.000307*
	No	2(33.3%)	6(66.7%)	
Diagnostics and Services	Good	1(100%)	0	1
	Poor	22(75.8%)	7(24.2%)	
Equipment	Yes	30(100%)	0	
	No			
Medicines and commodities	Good	1(100%)		1
	Poor	22(75.8%)	7(24.2%)	
Chronic Respiratory Diseases				
Availability of guideline	Yes	20 (95.2%)	1 (4.8%)	0.000884*
	No	3	6	
Trained health worker	Yes	22 (91.6%)	2 (8.4%)	0.000825*
	No	1 (16.6%)	5 (83.4%)	
Diagnostics and Services	Good	19 (82.6%)	4 (17.4%)	0.306
	Poor	4 (57.1%)	3 (42.9%)	
Equipment	Yes	2 (100%)		1
	No	21 (75%)	7 (25%)	
Medicines and commodities	Good	0	0	
	Poor	23 (76.7%)	7 (33.3%)	

*Significant at p<0.05

reporting, but are not supplied regularly. We have Amlodipine for hypertension, but available only the dose of 5 mg." **IDI 3**

Implementation challenges
Many of the study participants highlighted that the unavailability of essential drugs, frequent stock out, and poor supply of required drugs are major challenges for implementing the PEN program in primary health care settings.

"We don't have a various doses form of drugs, some patient required 850 mg and 1000 mg of metformin for diabetes, but we have only the dose of 500 mg." **IDI 3**
"Sometimes the medicines are not available, and we don't obtain them on time. The most of the time glucometer doesn't work properly." **IDI 4**

"For the patients, at least one bed is required for the day care. Sometimes, we do not have a space for patients and

shortage of nebulizers that is challenging to manage emergency conditions." **IDI 5**

"Sometimes medicines are not available on time and patients often have to wait for 2/3 months for their medications. Currently, there is a shortage of medicines for diabetes." **IDI 6**

DISCUSSION
This study found that the overall score for PEN was 71.4% for both municipalities. Readiness score of diagnostics and staff availability were the highest for Diabetes i.e., 76.6 and 83.3 respectively. The overall mean readiness index for each of the four major NCDs was highest (90.1) for breast cancer screening and the lowest in chronic respiratory disease i.e. 54.6 where as a study conducted in Bangladesh found that the general services readiness ranges between 47% for Community Centers (CCs) and 83% for Upajila Health Centers (UHCs). Guidelines and

Table 5. Bivariate analysis between background and dependent variable

	Background Variables	Overall Readiness Index of the Health Facility		p-value* (fisher exact)
		Ready (≥ 70%)	Not Ready (<70%)	
Cervical Cancer				
Availability of guideline	Yes No	21(87.5%) 2(33.3%)	3(12.5%) 4(67.7%)	0.0157*
Trained health worker	Yes No	20(86.9%) 3(42.8%)	3(13.1%) 4(57.2%)	0.0331*
Diagnostics and Services	Good Poor	21(87.5%) 2 (33.3%)	3(12.5%) 4(66.7%)	0.0157*
Equipment	Yes No	21(87.5%) 2(33.3%)	3(12.5%) 4(66.7%)	0.0157*
Medicines and commodities	Good Poor	6(75%) 17(73.9%)	2(25%) 5(26.1%)	1
Breast cancer				
Availability of guideline	Yes No	21(91.3%) 2(28.5%)	2(8.7%) 5(71.5%)	0.00269*
Trained health worker	Yes No	22(91.6%) 1(16.6%)	2(8.4%) 5(83.4%)	0.000825*
Diagnostics and Services	Good Poor	21(87.5%) 2(33.3%)	3(12.5%) 4(66.7%)	0.0157*
Equipment	Yes No	23(76.7%) 0	7(23.3%) 0	
Medicines and commodities	Good Poor	23(76.7%) 0	7(23.3%) 0	
Recording and Reporting				
Recording database(Register/Digital)	Yes No	21(91.3%) 2(28.5%)	2(8.7%) 5(71.5%)	0.00269*
Availability of register for T/T of Diagnosed patient	Yes No	21(91.3%) 2(28.5%)	2(8.7%) 5(71.5%)	0.00269*
Follow up plan of treatment	Yes No	23(85.1%) 0	4(14.9%) 3(100%)	0.00862*
Patient treatment card	Yes No	20(87%) 3(42.8%)	3(13%) 4(57.2%)	0.0331*
Availability of Laptop/Desktop	Yes No	23(76.7%) 0	7(23.3%) 0	
Availability of Internet	Yes No	23 (76.7%) 0	7 (23.3%) 0	
Availability of electricity in HF	Yes No	23(76.7%) 0	7(23.3%) 0	
Readiness status by Local level				
Local level	Lalitpur Metropolitan City Mahalaxmi Municipality	13(65%) 10(100%)	7(35%) 0	0.06372

*Significant at p<0.0

staff accessibility were the highest for Diabetes Mellitus in the UHCs i.e. 72%.The overall readiness score for each of the four major NCDs was below the cut-off value of 70%, with the highest 65% for Chronic respiratory illnesses.[11]

A study conducted in West Nigeria, more than 90% (≥ 30) of the PHC facilities in urban and rural settings were not prepared to implement essential interventions for each NCD across domains of staff training and essential medicines. About 90% of the PHC facilities in both site regions lacked a particular program for NCD prevention and control.[12] In our study the overall readiness score of the Mahalaxmi municipality was 77.1% whereas Lalitpur metropolitan city achieved 68.5% to provide the PEN services, which contradicts the findings of study conducted in west Nigeria. This study has some limitations, sample was selected through purposive sampling and the study was conducted with limited sample size and period. Therefore, the study findings may not be generalized to other local levels of district.

CONCLUSION

The discrepancies in readiness between the two municipalities are attributed to various factors, including availability of trained human resource, medicines, equipments and services available. Lalitpur Metropolitan City, with a larger population and double the number of health facilities compared to Mahalaxmi Municipality, faces greater resource demands to managing the PEN program. One major challenge identified by participants is the lack of diagnostic instruments for Chronic Respiratory Diseases (CRD) services. This highlights the importance of investing in essential equipment to enhance the capacity for diagnosing and managing CRDs effectively. The minimal technical requirements and lower cost associated with cancer screening and treatment services make them more accessible and manageable for health facilities. Increased in resource allocation, encourage regular and active participation of health facility operation management committee (HFOMC) meetings, collaboration, and decision-making processes, capacity-building for health workers to ensure proficiency in delivering PEN-related at the local level.

DECLARATIONS

Ethical Clearance
Ethical approval was obtained from IRC-PAHS

REFERENCES

1. Prasad B, Id S, Baral KP, Berger U, Parhofer KG, Rehfuess EA. Health sector readiness for the prevention and control of non-communicable diseases: a multi-method qualitative assessment in Nepal. PLoS One. Published online 2022:1-18. DOI | PLOS ONE | Google Schlolar | Full Text | Weblink |

2. Kabir A, Karim N, Islam RM, Romero L. Health system readiness for non- communicable diseases at the primary care level : a systematic review. Published online 2022. DOI | BMJ |Google Scholar | Full Text | Weblink

3. Laatikainen T, Dumcheva A, Kiriazova T, et al. Capacity building of health care professionals to perform interprofessional management of non-communicable diseases in primary care – experiences from Ukraine. 2021;1:1-15. DOI | BMC | Google Scholar| Full Text | Weblink |

4. Raj A, Id P, Id BC, et al. Mortality and risk factors of disease in Nepal : Trend and projections from 1990 to 2040. Published online 2020:1-14. DOI | PLOS ONE | Weblink | Full Text |

5. Department of Health Service Teku Kathmandu Nepal. Annual Report. Dep Heal Serv. 2022;79. DoHS | Full Text | Weblink |

6. Facility E, Of A, Availability S. Service Availability and Readiness Assessment (SARA) An annual monitoring system for service delivery Reference Manual. 2014. Full Text | Weblink | Google Scholar

7. WHO, Harmonized Assessment, Facility Service readiness Core questionnaire. 2022;(October). Google Scholar| Weblink | Full Text |

8. Department of health service Teku kathmandu nepal. Minimum service standard (MSS) for Health post. | Weblink | Full Text |

9. Department of health service teku kathmandu nepal. Package of essential non communicable disease (PEN Training Trainee's Manual). 2018;(2021):117-128. | Weblink | Full Text | DoHS

10. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77-101. | DOI | Google Scholar | Full Text |

11. Kabir A, Karim N, Billah B. Readiness of primary healthcare facilities for non-communicable diseases in Bangladesh. Europe PMC, 2022:1-22. DOI | Weblink | Google Scholar | Full Text

12. Akinwumi AF, Esimai OA, Arije O, Ojo TO. Preparedness of primary health care facilities on implementation of essential non - communicable disease interventions in osun state south - west Nigeria: a rural – urban comparative study. BMC Health Serv Res 23, 154(2023). DOI | Weblink | BMC | Full Text |

20

Journal of General Practice and Emergency Medicine of Nepal. 2024 Jun;11(17):13-20.