Preparedness and responsiveness of NCD service delivery: PEN clinics, Myanmar

Research team members

Dr. Kyaw Kan Kaung
Director,
NCD Unit, MoHS

Professor Dr. Ko Ko
Professor / Head,
Diabetes and Endocrinology Department,
University of Medicine (2), MoHS

Dr. Lwin Lwin Aye
Assistant Director,
NCD Unit, MoHS

Dr. Le Le Win
Deputy Director (Retired),
Health Systems Research Division,
Department of Medical Research, MoHS

Dr. Yin Thet Nu Oo
Deputy Director / Head,
Health Systems Research Division,
Department of Medical Research, MoHS

Dr. Aung Pye Phyo
Research Officer,
Medical Statistics Division,
Department of Medical Research, MoHS

Dr. Mya Lay New
Deputy Director,
NCD Unit, MoHS

Dr. Maung Maung Thant
Associate Professor,
Diabetes and Endocrinology Department,
University of Medicine (2), MoHS

Daw Khin Thiri Maung
Deputy Project Manager,
HelpAge International

Dr. Kay Khaing Linn
Health Coordinator,
HelpAge International

Dr. Kyaw Myint Myat Thein
Project Coordinator,
NCD Health Project, University of Medicine (2)

Data Collectors

U Naing Aye
U Si Thu Lwin
U Zay Htet Aung
U Kyaw Myo Htet
U Myo Thu
Daw Hin Htet Htet Hlaing
Daw Thae Ei Phyu
Dae Nandar Linn Maung
Daw Shun Lae Yi Oo
Daw Yin Yin Aye (DMR)

Table of contents
➔

List of tables
➔

Abbreviations

ANC	Antenatal care
BHS	Basic health staff
CRD	Chronic respiratory diseases
CVD	Cardiovascular disease
EPHS	Essential Package of Health Services
FOC	Free of charge
FTFI	Face-to-face interview
HA	Health assistant
LHV	Lady health visitor
MCH	Maternal and child health centres
MDG	Millennium Development Goal
MNCH	Maternal, new-born and child health
MoHS	Ministry of Health and Sports
MW	Midwife
NCD	Non-communicable diseases
NHP	National Health Plan
NR	Not relevant
PEN	Package of Essential Non-Communicable Disease Intervention
PHC	Primary Health Care
PHS	Public Health Supervisor
RHC	Rural health centre
SARA	Service Availability and Readiness Assessment
SOP	Standard Operating Procedure
TN	Trained nurse
TOT	Training of Trainers
UHC	Universal health coverage
UHC	Urban health centre
WHO	World Health Organization

Acknowledgements

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Summary

Non-communicable diseases - NCDs are chronic in nature, which need long-term continuity of care. In Myanmar, deaths from NCDs had been increasing: 40% of all deaths in 2010, 59% in 2014 and 68% in 2016 respectively. This shows NCD burden exceeds the burden of communicable diseases and women and child health, Ministry of Health and Sports (MoHS) has been targeting for prevention and control of NCDs with the objective to reduce incidence of NCDs in Myanmar. For the rural people, primary health care (PHC) services for NCDs were not accessible easily. To narrow the gap between primary and tertiary level, MoHS has adopted the WHO Package of Essential Non-communicable Disease – PEN Intervention, with the concept to integrate NCDs into primary health care. The PEN intervention targeted on screening, treatment and referral for NCDs, particularly diabetes, hypertension, chronic respiratory diseases (CRD), suspected cancers (breast cancer, cervical cancer, oral cancer) and cardiovascular disease (CVD) risk management at peripheral health level, which have been providing by basic health staff (BHS). NCD services at PEN clinics were performed by BHS, who had attended township level multiplier PEN training. To address the sustainability and expansion of implementation the PEN intervention, status quo of service delivery at PEN clinics by BHs should be assessed. To achieve this objective, this study determined preparedness and responsiveness of the NCD services focusing on service delivery at PEN clinics.

A cross-sectional study design was conducted during 2019 at randomly selected 4 PEN townships – Kyaung Kone, Kyeik Hto, Kun Hein and Minbu. After excluding the facilities that located in hard-to-reach areas, 50 facilities-cum-PEN clinics included in the study. A total of 131 available BHS (11 Health Assistants, 14 Lady Health Visitors, 61 midwives, 44 Public Health Supervisors II and 1 trained nurse) from the selected PEN clinics and 260 clients of age 40 years and above who took NCD services from the selected PEN clinics involved in the study. The providers were interviewed with the pre-tested semi-structure questionnaire about existing situation of NCD services, responsiveness (dignity, autonomy, confidentiality, prompt attention, quality of basic amenities, choice of care provider), opinion on readiness, sustainability and expansion of PEN clinics. With another pre-tested semi-structure questionnaire, exit interviews with the clients were carried out focusing on awareness and perception towards PEN clinic and NCD services at the selected PEN clinics. Also, the situation of medicines and equipment for the NCDs at the facilities were observed and the responsible staff for the stock were interviewed. Record review was also done. Data collection was conducted by the trained interviewers after getting consent.

Among the BHS, while majority had attended PEN training, still there were some staff who did not have PEN training due to unavailable during the training period. With regard to recording the NCD-related forms, most providers encountered with some difficulties such as **. They overcome these by helping each other, getting guidance from the seniors and referral the training materials.

The findings showed that community utilization and acceptance of PEN clinics for NCD services were high. However, among Full NCD services, majority of providers reported offering diabetes and hypertension the most at their facility, and these two NCDs were said ready to offer. Regarding the medicines, majority of staff indented only regular utilized items for NCDs such as Amlodipine 5 mg, Metformin 500 mg and Gliclazide 80 mg. From the observation process, at

some facilities, some medicines were found with close expiry date or already expired, incompatible accessories, for instance, strips for glucometer and lipid analysers.

The findings pointed out RHCs and sub RHCs as the suitable health facilities for PEN expansion, since these peripheral health facilities could take care of rural people. Though majority of the providers proposed to work as a team among BHS for delivering NCD services, midwives and PHS II were recommended as the key health workers for PEN intervention.

The report indicated the requirement of further improvement in training scheme, recording issues, supply system for medicines and equipment. Some responsiveness domains of privacy, prompt attention and choice of care providers would also be need to pay attention. With a considerable suggestions and explanations for readiness, sustainable and expansion of PEN clinics, the integration of PEN intervention to PHC of Myanmar could be able to accomplish in near future.

INTRODUCTION

Magnitude of NCDs in Myanmar

National universal health coverage (UHC) consultation meeting, 2012, highlighted that Myanmar faces three disease burdens: burden from communicable diseases, the unfinished Millennium Development Goal (MDG) agenda for women's and children's health and burden from the rise in the prevalence of non-communicable diseases (NCD) including injuries and chronic diseases condition[1]. World Health Organization (WHO) had estimated that deaths from NCDs of Myanmar was 40% of all deaths in 2010, 59% in 2014 and 68% in 2016 respectively[2, 3, 4]. This shows that NCDs of Myanmar is major health problem with high risk for the people.

Current NCD service delivery in Myanmar

NCDs are chronic in nature, which need long-term continuity of care. Since the NCD burden exceeds the burden of communicable diseases and women and child health, Ministry of Health and Sports (MoHS) has been targeting for prevention and control of NCDs with the objective to reduce incidence of NCDs in Myanmar.

Over the past few decades, public health sector focuses on communicable diseases and there are no facilities and no capacity for NCDs; giving priority on treatment but not on prevention, which led to various shortcomings in service availability for NCDs. Several studies relating to service availability and readiness assessment (SARA) were conducted in Africa[5, 6, 7]. Of which, the assessments done in Zambia, Tanzania and Uganda had pointed out that service availability and readiness scores for NCDs (diabetics, CVD and CRD) at both government and non-government health facilities were lower than other health interventions such as communicable diseases and family planning, maternal and child health, surgery, blood transfusion. Collectively, in these countries, NCD services were offered at around 50% of the facilities (ranged from 3% to 51%), and most of the tracer items had low readiness scores. Similar situation was also observed in Myanmar.

One nation-wide SARA study was conducted at 166 public health facilities (from tertiary hospitals to rural health centres - RHCs / sub-RHCs) and 35 private hospitals during 2014 in Myanmar focusing on county's priority health care services and NCDs was one component[8]. This assessment showed that regarding NCDs, services for diagnosis and/or management of diabetes, CVD and CRD were offered at most facilities, particularly at hospitals. Services for cervical cancer diagnosis were offered at hospitals only. However, most facilities lacked guidelines and trained staff for NCDs and other necessary tracer items such as equipment, medicines and commodities were more available at hospitals than at RHCs and sub-RHCs[8]. Another baseline study[9] on maternal and child health services, NCDs and water, sanitation and hygiene (WASH) at public health facilities in Hlegu Township conducted during 2015 and 2016. This study also observed comparable conditions relating to NCD service readiness at the health facilities. Both studies highlighted the need of further improvement of service delivery for the NCDs, especially at peripheral level.

In Myanmar, generally, rural people, 70% of country population, are not accessible to the service provision at secondary and tertiary hospitals. In rural area, for the people with diabetes mellitus, ischemic heart diseases, cancer and respiratory diseases, there is no primary health care (PHC) services for NCDs. In order to reduce the gap between primary and tertiary level, MoHS has adopted the WHO Package of Essential Non-communicable Disease (PEN) Intervention[10], with the concept to integrate NCDs into primary health care (PHC). Implementation of PEN mainly emphasizes on PHC responsive for NCD prevention and control, which aims for national extension[11].

PEN intervention in Myanmar

The pilot study on Myanmar PEN intervention was implemented in 2012. NCD service provision through PEN clinics started in May 2017 with phase by phase approach – 20 townships in 2017, 70 townships in February 2018 and 127 townships from April to December 2018. **The PEN intervention will be extended to 105 townships in 2019**.(**→ Please confirm)** PEN intervention targets to those of age 40 years and above with NCDs. The intervention targeted on screening, treatment and referral for NCDs, particularly diabetes, hypertension, CRD, suspected cancers (breast cancer, cervical cancer, oral cancer) and CVD risk management. PEN services were provided at urban health centres (UHC), maternal and child health (MCHs), RHCs and sub RHCs. As shown in table 1, in addition to their routine duties, basic health staff (BHS - health assistant (HA), lady health visitor (LHV), midwife and public health supervisor (PHS) II) were trained and delegated to perform PEN intervention in addition to their routine duties[12, 13].

Table 1. Duties and Responsibilities of BHS

BHS	Main Duties and Responsibilities
HA	Administrative functions PHC and communicable disease control activities Curative care activities including CVD, diabetes, cancer and prevention of accidents and trauma
LHV	MCH services Public health and disease control activities Supervision
Midwife	MCH and reproductive health care

	Immunization and nutrition promotion Disease control activities Prevention of NCDs including CVD project, diabetes control project, cancer prevention project, accident prevention project Campaign diseases
PHS II	Multipurpose worker involving in • Disease control • Environmental sanitation • Immunization • Basic health services • Field visits • Activities regarding to family health care, school health, nutrition promotion, environmental sanitation, communicable disease control, immunization programme, etc.

Comprehensive trainings were given to BHS using Training of Trainer (TOT) Manual for PEN, which was adapted to Myanmar context[11]. They were trained for screening, treatment, referral, giving health education and counseling on healthy behaviors for the specific NCDs, recording and reporting mechanism. The PEN clinics were provided with 7 essential medicines for NCDs (i.e., Amlodipine 5 mg, Atenolol 50 mg, Enalapril 5 mg, Metformin 500 mg, Gliclazide 80 mag, Aspirin 75 mag and Atorvastatin 10 mg), equipment and materials for diagnosis, screening such as glucometers, strips, pressure cuff. Additionally, the staff were monitored and supervised every six month[11].

JUSTIFICATION

The PEN intervention has been implementing by BHS as field implementers and has a plan for expansion in near future. To address the sustainability of implementation the PEN clinics / intervention, status quo of service delivery at PEN clinics by BHS should be assessed.

At present, the BHS are major community-based health workforce responsible for providing comprehensive health care service. They are working as multi-purpose health workers for the community, especially for the rural people. As multipurpose health workers, they are responsible for public health, disease control and curative health services, administrative and managerial functions [12, 13].

To know opinion of providers and NCD clients towards service provision, interaction between service providers and clients, and how well the health facilities meet legitimate expectation of the clients on non-health matters is equally importance as availability of medicines, equipment and skillful persons to serve the people, i.e., preparedness. This aspect would be answered by seven elements that make up responsiveness to people's expectations in regard to non-health matters: respect of persons and client orientation. The first aspect includes 3 elements such as dignity, autonomy and confidentiality of information, and the latter concerns with 4 elements - prompt attention, quality of basic amenities, choice of care provider and access to social support networks[14].

Hence, information on service availability and readiness of the PEN clinics / intervention and perceptions of the service providers and community towards NCD services at PEN clinics is required for an evidence base to assist policy-makers enhancing PEN clinics / intervention. This study aimed to fulfill this gap by determining preparedness and responsiveness of the NCD services focusing on service delivery at PEN clinics.

OBJECTIVES

General objective

- To assess preparedness and responsiveness of NCD services at PEN clinics

Specific objectives

- To assess current service provision for NCDs at PEN clinics
- To assess perceptions of service providers towards NCD services at PEN clinics
- To assess awareness and perceptions of the clients towards NCD services at PEN clinics
- To assess preparedness of service delivery for NCDs at PEN clinics
- To provide input for sustainable and expansion of NCD services at PEN clinics

Description of health facilities and implementation of PEN intervention in study townships

The PEN clinic-based study conducted in 4 townships – Kun Hein, Kyaung Kone, Kyeik Hto and Minbu.

Geographical location of Kun Hein township

Kun Hein township of Shan (South) Region has uncovered areas locating in special region. As for the peripheral health facilities, it has only 3 RHCs and 12 sub RHCs. Six sub RHCs are either located in uncovered areas or on the mountain range, which were not feasible for travelling to get there.

Situation of BHS working at health facilities

Staff organization at peripheral level were the same at all study townships. In addition, people from special region of Kun Hein township were provided by special health clinic (special clinic). The services at special clinic were delivered by 1 midwife, 1 PHS II and 1 trained nurse and they were appointed by MoHS. In Kun Hein township, among 17 newly appointed PHS IIs, 14 were attached at Township Hospital because of language barriers and accommodation problem. Accordingly, these newly PHS IIs had no experience with the tasks of sub RHCs including NCDs.

PEN Training

Township level multiplier PEN trainings (Training of Trainers - TOT) were given to health providers including BHS in the study townships from January 2018 to February 2018: Kyaung

Kone township on 29th January to 31st January 2018, Kun Hein on 30th January 2018, Kyeik Hto on 14th February to 16th February 2018 and Minbu on 15th February to 17th February 2018 respectively. They were trained to provide FULL PEN services for 7 identified particular NCDs, involving screening, treatment and referral for diabetes, hypertension and CRD, screening and referral for breast cancer, cervical cancer and oral cancer, and risk management for CVD**.** All the attendees were provided with TOT manual for PEN intervention[11].

They were also instructed / trained for recording and reporting of 6 NCD-related forms namely - Participants' Registry for NCD screening, NCD clinical record, NCD clinical record, Daily NCD disease register, Quarterly report of NCD screening activities, Quarterly NCD disease Report and Referral form. Moreover, they were accountable for indenting medicines and equipment to Township Health Department and/or Township Hospital.

Implementation of PEN clinics in study townships

In all study townships, all types of health facility at peripheral level were implementing as PEN clinics. Generally, NCD services were provided since 2017.

METHODOLOGY

Study design

Cross-sectional study design

Study areas

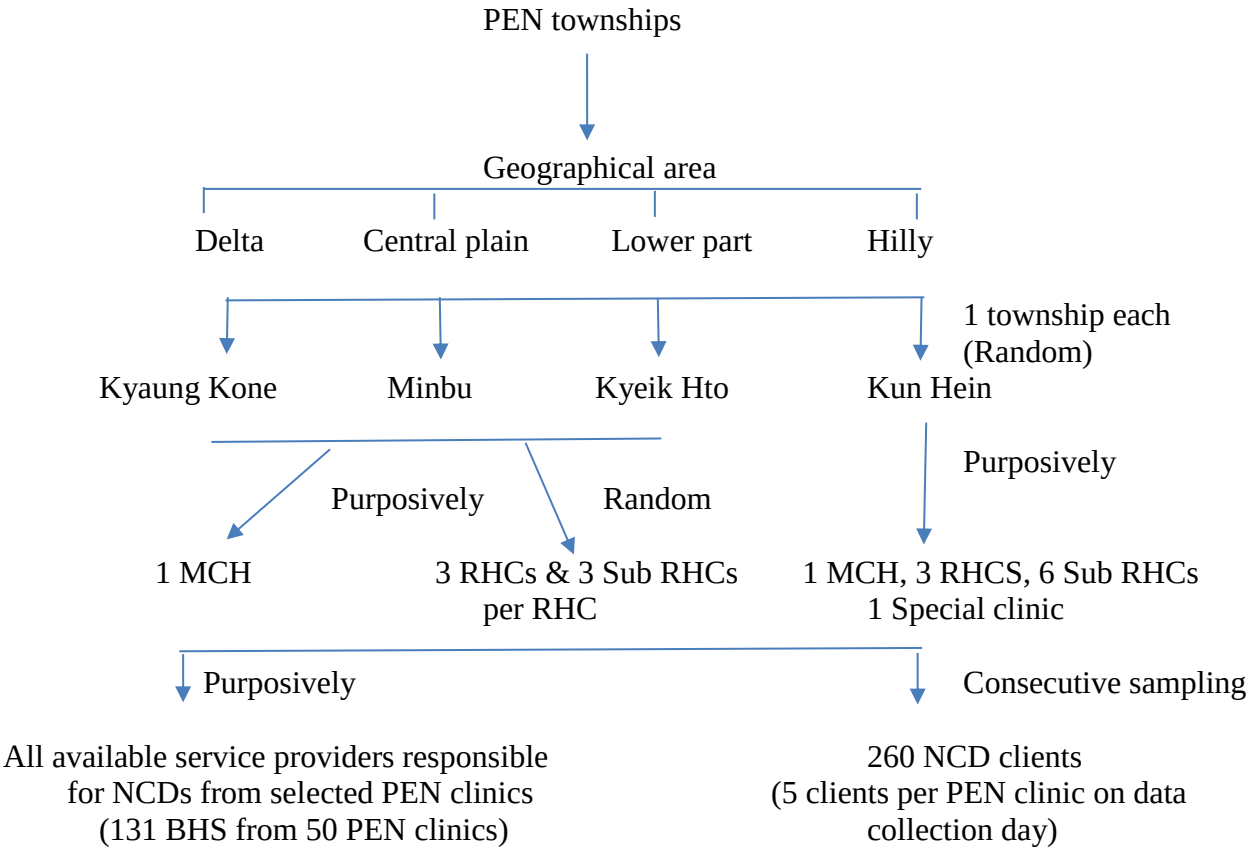
Study was done at PEN townships locating in delta, hilly, central plain and lower part of the country.

Study population

Two types of study population were involved.

(i) Service providers from the selected PEN clinics
(ii) Clients of age 40 years and above who took NCD services from the selected PEN clinics

Sampling and sample size of study areas and study population



First, 157 PEN townships (Annex 1) were grouped according to four geographical areas namely delta, hilly, central plain and lower part of the country. Then, one township from each geographical area was chosen randomly by lottery method. In each selected township, 1 UHC / MCH, 3 RHCs and 3 sub - RHCs per RHC were planned to be involved.

In all study townships, only MCH was offering NCDs as PEN clinics. Except in Kun Hein township, RHCs and sub-centres were selected randomly after excluding health facilities that located in hard-to-reach areas**.** The discrepancies from the proposed facility selection was found in Kun Hein township – the township has only 3 RHCs, which could not be able to select randomly. After excluding 6 sub RHCs due to security and transportation difficulties, 6 sub RHCs were involved in the study. To get enough facilities, the special clinic was considered to include in study.

Finally, a total of 50 facilities, which are also PEN clinics, were involved as shown in table 2. Overall, about one-third of total facilities from all study townships, whereas at least 25% of each facility type included in the study.

Table 2. Number of health facilities involved in study by township

Township	Total health facilities in township					Total no. (%) of health facilities involved in study				
	MCH	RHC	Sub RHC	Special clinic	Total	MCH	RHC	Sub RHC	Special clinic	Total No. (%)*
Kyaung Kone	1	9	42	NR	52	1	3	9	NR	13 (25)
Kyeik Hto	1	7	28	NR	36	1	3	9	NR	13 (36.1)
Kun Hein	1	3	12	1	17	1	3	6	1	11 (64.7)
Minbu	1	7	35	NR	43	1	3	9	NR	13 (30.2)
Total	4	26	117	1	148	4	12	33	1	50 (33.8)

*Row percent

NR Not relevant, i.e., Special clinic is not existed in the respective township

Selection of respondents

Regarding the health providers, all BHS responsible for NCDs from the selected PEN clinics in each township were planned to be interviewed. Main criteria for inclusion of service providers was those who had been working at facility and involved in NCD service delivery.

Since the study design was PEN clinic-based approach, only available staff who were working for PEN service at the time of data collection were interviewed. Out of 156 appointed BHS from 4 townships, 131 (83.9%) were available at the time of data collection (Table 3). Those who were attending training courses, those who were assigned for other duty and those who were on leave were not involved. Also, who were appointed to the selected PEN clinics, but were attached to other health facilities - either hospital or RHC, Sub RHC were excluded from the study since they did not have any experience and knowledge about PEN services of that health facility (Table 4). The latter situation was found in Kun Hein Township - out of 17 newly appointed PHS II for the entire township, only 3 were working at their assigned health facility.

Table 3. Number of providers involved in study by type of township

Township	Total number of appointed BHS in township						Total number of available BHS at the time of data collection					
	HA	LHV	MW	PHSII	TN	Total	HA	LHV	MW	PHSII	TN	Total No. (%)*
Kyaung Kone	3	4	18	15	NR	40	3	4	15	15	NR	37 (92.5)
Kyeik Hto	3	4	20	15	NR	42	3	3	17	15	NR	38 (90.5)
Kun Hein	3	3	14	13	1	34	2	3	13	7	1	22 (64.7)
Minbu	3	4	18	16	NR	41	3	4	16	11	NR	34 (82.9)
Total	12	15	70	59	1	157	11	14	61	44	1	131 (83.4)

*Row percent

Table 4. Reasons and number of providers not involving in study by type of township

Township	Reasons and number of providers not involving in study
Kyaung Kone	2 midwives were attending nursing course, 1 midwife was on leave
Kyeik Hto	1 LHV was transferred out, 1 midwife was attending nursing course, 1 midwife was attached to sub RHC, 1 midwife was resigned
Kun Hein	1 HA was on leave, 1 midwife was promoted and vacant, 2 PHS II were attached at hospital
Minbu	1 midwife was attending nursing course, 1 midwife was attached to other township, 3 PHS II were assigned at Pagoda festival for medical cover, 2 PHS II were vacant

For face-to-face interview (FTFI), all 131 BHS were involved in the study as shown in table 5. Of which, 50 BHS, one provider who was responsible for stock from each selected facility, were purposively chosen for the observation (Table 6).

Table 5. Type and number of total providers involved in study by type of facility

Type of BHS	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total
HA	NR	11	NR	NR	11
LHV	4	10	NR	NR	14
Midwife	12	15	33	1	61
PHS II	NR	19	24	1	44
Trained nurse	NR	NR	NR	1	1
Total	16	55	57	3	131

NR Not relevant since the particular type of BHS was not appointed

Among a total of 131 BHS, midwives were the largest number of staff, followed by PHS II. Majority were from RHCs and sub RHCs.

Table 6. Number of providers involved for observation by types of facility and provider

Type of BHS	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total (%)
HA	NR	9	NR	NR	9 (18)
LHV	3	1	NR	0	4 (8)
Midwife	1	0	31	0	32 (64)
PHS II	NR	2	2	0	4 (8)
Trained nurse	NR	NR	NR	1	1 (2)
Total	4	12	33	1	50

NR Not relevant since the particular type of BHS was not appointed

For the observation, midwives were the main responsible person for the stock and most were from the sub RHCs (Table 6).

For the clients, a total of 260 clients - 5 clients of age 40 years and above with NCDs per PEN clinic were involved for interviewing. The following table shows the number of clients involved in study.

Table 7. Number of clients involved in study by types of facility and township

Township	Type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total
Kyaung Kone	5	15	45	0	65
Kyeik Hto	5	15	15	0	65
Kun Hein	5	22	32	6	65
Minbu	5	16	44	0	65
Total	20	68	136	6	260

Data collection

Development of research tools

Research tools (i.e., semi-structured questionnaires for service providers and clients, observation check list at PEN clinics) were developed basing on WHO standardized tools and were adapted as per study objectives and components used in Myanmar PEN intervention. For this purpose, the following tools were used.

(i) WHO SARA questionnaire[15],
(ii) NCDs: Tools for implementing WHO PEN[16], and
(iii) WHO: Responsiveness questionnaires, 1999[17]
(iv) List of medicines and equipment distributed / issued to PEN clinics for NCDs

Based on WHO SARA questionnaire[15, 16], the questions relating to preparedness were developed regarding NCD-related printed materials (i.e., guidelines, standard operating procedure - SOP and list of essential NCD medicines), essential NCD medicines and equipment identified for PEN clinics.

Research questions on responsiveness were developed depending on WHO key informant questionnaire / WHO frame work for responsiveness[17]. According to the study objectives and type of selected facilities, out of 7 elements of responsiveness, followings items were excluded because in-patient care and surgery were not conducted at all facility types involved in study.

- Access to Social support networks during in-patient care
- Time spent on waiting list for non-emergency surgery relating to Prompt attention
- Nutrition and edibility of food provided to in-patients and cleanness of linen relating to element about Quality of basic amenities

Due to time constraints, especially short-time period between pre-test and main survey, validation of questions about the responsiveness could not be done. However, surveys on 6 elements of responsiveness had already conducted by many countries and proved of instrument validation[18].

In addition, during the pre-test, interviewees could answer these 6 components, which only required to rephrase the questions in Myanmar language. Hence, this condition gave us opportunity to apply the questions on responsiveness.

Gathering information

Information on preparedness and responsiveness to service delivery for NCDs were gathered from the service providers on the day of data collection using the pre tested semi-structured questionnaire (Annex II).

Face-to-face interviews about existing situation of NCD services, responsiveness (i.e., dignity, autonomy, confidentiality, prompt attention, quality of basic amenities, choice of care provider), opinion on utilization and acceptance of PEN clinic / intervention by community, provider's perception on services providing at PEN clinic – possibilities of readiness, sustainability and expansion were done with all 131 providers. Patient registers, 4th Quarterly reports of 2018 (i.e., October to December 2018) for Full PEN services were reviewed for screening, diagnosing, taking treatment and referral of NCD patients.

Pre tested observation check list (Annex II) was used to assess the availability and readiness of NCD services at all selected 50 facilities. Current of NCD-related printed materials, medicines and equipment were observed. While observing, stock books were reviewed and the responsible staff was asked about reasons for not observing, expiry, stock out and not functioning and how the medicines and equipment were indented and issued. The responsible staff were not probed for further detailed reasons. For each type of medicine, at least one box was selected randomly with the permission of the responsible staff. The condition of the selected box reflected the whole lot of that specific type of medicine. If the randomly selected one was observed but expired or not observed on the day of data collection, that particular medicine was regarded as not in the preparedness stage. The same concept was used for the equipment.

Clients' awareness and opinion towards NCD service delivery provided at the respective PEN clinics were asked by exit interview using pre tested semi-structured questionnaire (Annex II).

In Kun Hein township, because of language barrier, except at MCH, translators (non-health persons) were used at other health facilities. At each facility, the translators were recruited on the site of interview, and they were explained about objectives, questionnaire and process of the study before taking client consent and interviewing.

Interviews and observation were conducted after getting consent from the respondents by the trained interviewers (Annex II).

Overall data collection method was shown in below table.

Table 8. Types of data collection method and tools

Data collection method and tools	Information
Secondary data review using checklist	Stock book for situation of medicines and equipment at the PEN clinic
FTFI with service providers using semi-structured questionnaire	Existing situation of NCD services, responsiveness (dignity, autonomy, confidentiality, prompt attention, quality of basic amenities, choice of care provider) Opinion on community's acceptance of PEN clinic / intervention Provider's perception on service providing at PEN clinic
Observation by check list	Availability and readiness regarding guide lines and SOP, medicines and basic equipment for NCDs
Exit interview with clients using semi-structured questionnaire	Clients' awareness and perception towards PEN clinic and NCD services at the selected PEN clinics

Recruitment of interviewers

Since the questionnaires were mainly focused on health-related service delivery, availability of medicines, equipment for NCDs at health facilities, 10 BComH (→ **to confirm**) were recruited as interviewers, who had experience on data collection.

Pre-test

To familiarize and understand the questionnaires and observation checklist, and to estimate the time for interviewing, pre-test was carried out at UHC, which were PEN clinics, Hlaing Taryar Township. Pre-test involved 12 BHS (1 HA, 1 LHV, 8 MW, 1 PHS II, 1 TN) and 21 clients of age 40 years and above with any NCD getting service from that PEN clinics.

Research tools were modified – wording, phrases and sequence of questions. Prior to pre-test, interviewers were trained for 3 days in February 2019. After the pre-test, reorientation training for the interviewers were given with the modified research tools.

Main data collection

Main data collection was conducted in March 2019 (Annex III) after ethical approval was obtained from Ethics Review Committee, University of Public Health (Annex IV).

Expected outputs

Existing situation of preparedness and responsiveness to NCDs at PEN clinics in terms of service availability and readiness, opinions of providers and clients on feasibility, sustainability and expansion of the PEN clinics

Ethical consideration

Since the information were related to the service delivery, strict confidentially about information was taken into consideration – using anonymous names for the health facilities and codes for the respondents. The interviews were carried out at the place with privacy.

Plan of analysis

Descriptive analysis was carried out for interviews and observations to capture service availability and readiness to respond to the preparedness and responsiveness of NCD services at PEN clinics.

Regarding responsiveness, based on the answers given for each main element (see Annex II), the responsiveness was assessed by type of performing sub-element of each main element. The performance type of responsiveness was categorised by best performing element and worst performing element as follow[18].

Table 9. Assessing responsiveness

Main element	Best performing sub element	Worst performing sub element
Respect for parsons element		
Dignity	Always and Usually	Never and Sometimes
Autonomy	Always and Usually	Never and Sometimes
Confidentiality	Always and Usually	Never and Sometimes
Client orientation element		
Prompt attention	50% to 75% and > 75%	< 25% and 25% to 50%
Basic amenities	Good and very good	Poor and Very poor
Choice of care provider	Always and Usually	Never and Sometimes

Findings from different sources were triangulated to recommend for policy and advocacy related to expansion and sustainability of PEN clinics for NCDs under the care of BHS in Myanmar.

Working definitions

Preparedness

Preparedness refers assessing and helping to improve the ability of health care system, communities and individuals to prepare for and respond to a public health. This includes availability and readiness of service delivery, plans and preparations for the patients in need, i.e., planning, training and resource acquisition[19, 20].

Responsiveness

WHO had defined “Responsiveness” as the outcome that can be achieved when institutions and institutional relationships are designed in such a way that they are cognisant and respond appropriately to the universally legitimate expectations of individuals, which is related to the safeguarding of rights of patients to adequate and timely care. This includes people's non-medical

expectations - how the clients should be treated, both physically and psychologically, respect for clients' wishes, i.e., respect for personal includes dignity, autonomy and confidentiality of information, and client orientation includes prompt attention, basic amenities, choice of provider[18, 21].

The 6 responsiveness elements were defined as follow[15].

Dignity

Individuals should be treated with concern and respect

Autonomy

Individuals should be allowed to make decisions

Confidentiality

Health care providers should maintain the confidentiality of any information that is provided by patient and information in medical records

Prompt attention

Patients should be able to get care fast in emergencies, and waiting times should be reasonable

Basic amenities

Environment in which health care is provided should have adequate quality

Choice of care provider

Individuals should be able to get a second opinion regarding choosing a health care provider

Findings

Since the study objectives and design were based on health facilities providing NCD services at PEN clinics in PEN townships, and not to compare townships situation, the report mainly focused on facility-based findings of the aggregated all study townships. Township-wise findings of PEN clinics were not stated / mentioned in this report unless it was necessary.

Characteristics of study respondents

Table 10. Sociodemographic characteristics of the service providers involved in FTFI (n = 131 providers)

Characteristics of providers	No. (%)
Age group (in years)	
20 – 30	64 (48.9)
30 – 40	43 (32.8)
40 – 50	17 (12.9)
50 – 60	7 (5.3)
Sex	
Male	20 (15.3%)
Female	111 (84.7%)
Service years at facility	
1 – 10	104 (79.4)
10 – 20	24 (18.3)
20 – 30	3 (2.3)

Majority of the service providers were middle aged staff (81.7%) and females (84.7%). Most of them have been working at the facility for up to 10 years, and only one midwife each from Kun Hein and Kyeik Hto have been serving for 18 and 20 years respectively (Table 10).

Among a total of 131 BHS from 50 PEN clinics, one responsible staff for stock from each selected facility participated in the process of observation.

Table 11. Sociodemographic characteristics of service providers involved in observation (n = 50)

Characteristics of providers	No. (%)
Designation	
HA	9 (18)
LHV	4 (8)
Midwife	32 (64)
PHS II	4 (8)
Trained nurse	1 (2)
Service years for stock duty	
1 – 5	35 (70)
5 – 10	8 (16)
10 – 15	5 (10)
15 – 20	2 (4)

Majority were midwives. Total service years of these 50 providers for stock ranged from 1 to 20 years. Most of them had involved in stock duty for 1 to 5 years (Table 11).

Current NCD services provision at PEN clinics

During PEN training, the BHS were trained to provide FULL NCD services at PEN clinics. To know whether the facilities had provided FULL NCD services or not, the providers were asked which NCD services were delivered at their clinic.

Table 12. Reported type of NCD services providing at PEN clinics in study townships by type of facility (n = 131 providers) → section B - 1

Type of NCD services (multiple responses)	No. of providers reported providing NCD services				
	MCH n = 16	RHC n = 55	Sub RHC n = 57	Special clinic n = 3	Total No. (%)*
Diabetes screening, treatment and referral	16	55	57	3	131 (100)
Hypertension screening, treatment and referral	16	55	57	3	131 (100)
CRD screening, treatment and referral	9	30	20	0	59 (45.04)
Breast cancer screening	6	14	7	0	27 20.6)
Cervical cancer screening	6	7	4	0	17 (12.9)
Oral cancer screening	5	12	1	0	18 (13.7)
CVD risk management	5	19	15	0	39 (29.8)

*Column percent

Among Full PEN services, while diabetes and hypertension were reported providing at all PEN clinics, CRD at nearly half of the clinics and CVD risk management at about 30% of the clinics. The cancers were the least NCDs reported by the facilities. Staff from special clinic said they provided only diabetes and hypertension (Table 12).

Receiving PEN training

The providers were asked about the number of BHS, who had attended PEN training among the appointed BHS and who had been working at the facility. They were also requested to mention for each type of BHS.

Table 13. Reported percent of staff who had attended PEN training among appointed BHS →C 1

Reported % of trained staff among appointed BHS	Reported type of BHS who had attended PEN training
0	HA (reported by 16 BHS) LHV (reported by 17 BHS) Midwife (reported by 3 BHS) PHS II (reported by 12 BHS)
50	Midwife (reported by 13 BHS) PHS II (reported by 14 BHS)

75	Midwife (reported by 3 BHS)
100	HA (reported by 49 BHS) LHV (reported by 2 BHS) Midwife (reported by 111 BHS) PHS II (reported by 92 BHS) Trained nurse (reported by 1 BHS)

Out of 131 providers, while most said all of the appointed HAs, midwives, PHS II and trained nurse had attended PEN training (i.e., reported that 100% of each type of BHS were trained), a few said most of the midwives and PHS II (50% and 75%) from study townships had also received the training. On the other hand, not more than 20 providers said except trained nurse, there were still other types of BHS who had not attended the training (0%) (Table 13). Of which, most identified HAs, LHVs and PHS II than midwives.

All BHS involved in the study were asked why those had missed the training.

Table 14. Reported reasons for not attending PEN training (n = 131 providers) → Section C - 2

Reasons (multiple responses)	No. of reported BHS (%)
Engaged with other events	21 (16.03)
Worked at other facility at the time of training	15 (11.5)
Newly appointed to facility after training	1 (0.8)

Note Do not include who did not give reasons

Although all 131 providers were asked, only a few gave reasons. They explained that at the time of PEN training, while some were attending other training or on leave or engaging with other duty, some were not posted at the facility (Table 14).

Receiving PEN instruction

The staff were asked about receiving PEN instruction for performing NCD services.

Table 15. Number of providers receiving PEN instruction by facility type in study Townships → section B - 20

Received	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Yes	16	54	56	3	129 (98.5)
No	0	1	1	0	2 (1.5)
Total	16	55	57	3	131

Nearly all providers (98.5%) said they received PEN instruction verbally (Table 15). Almost all of them answered thy were told about it at the township level PEN training. Only two staff said they

did not receive the instruction because of recent posting to the facility but they managed to deliver NCD services by getting support from senior staff and co-workers.

Recording forms and barriers

BHS were instructed to fill 6 NCD-related forms. In addition to these forms, they were enquired whether they had stock books for medicines and equipment.

Table 16. Reported type of recording forms using at PEN clinics in study townships by type of facility (n = 131 providers) → C 3

Type of forms (multiple responses)	No. of providers reported providing NCD services				
	MCH n = 16	RHC n = 55	Sub RHC n = 57	Special clinic n = 3	Total No. (%)*
Participants' Registry for NCD screening	14	52	53	3	122 (93.1)
NCD clinical record	15	49	52	3	119 (90.8)
Daily NCD disease register	14	48	49	3	114 (87.02)
Quarterly report of NCD screening activities	14	46	48	3	111 (84.7)
Quarterly NCD disease Report	13	44	49	3	109 (83.2)
Referral form	9	30	34	3	76 (58.02)
Stock book for essential NCD medicines	0	27	9	1	37 (28.3)
Stock book for equipment for NCDs	0	2	4	0	6 (4.6)

*Column percent

About 58% of the providers said they used referral form and majority said they also used other 5 NCD forms at their clinic. While some said they had stock book for NCD medicines, only 6 BHS said their facilities had stock book for the equipment (Table 16). They explained that they had been using Health Facility Stock Report. but not all 7 essential NCD medicines did not involve in it.

Table 17. Number of providers finding difficulties in recording forms by facility type in study Townships → C4

Find difficulty	No. of providers by facility type				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Yes	8	23	28	3	62 (47.3)
No	8	32	29	0	69 (52.7)
Total	16	55	57	3	131

When asking about finding difficulties in recording forms, nearly half of them said there were some problems (Table 17) and the types of difficulties were shown in table 18.

Table 18. Reported reasons for having difficulties in recording forms by type of facility in all study townships (n = 62 providers) → C5

Type of difficulties (multiple responses)	No. of providers by facility type				
	MCH n = 8	RHC n = 23	Sub RHC n = 28	Special clinic n = 3	Total No. (%)
Difficulty with form layout	4	12	16	1	33 (53.2)
Difficulty in recording, calculation, etc.	1	6	6	1	14 (22.6)
Staff were overload	3	5	1	0	9 (14.5)
Instructions were unclear	0	3	3	0	6 (9.7)
Had not attended PEN training	0	2	2	0	4 (6.5)
Never done recording	0	4	0	0	4 (6.5)
Too many forms and papers	0	2	1	0	3 (4.8)
Other	0	1	1	1	3 (4.8)

About half of the providers said they had to struggle with form format, explaining too many tasks and complications were the main issues with the layout of the forms.

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- Screening □□□□□□□□□□□□□□□□□□□ BP, BW, Height □□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□□ OPD □□□□□□□□□□□□□□□□□□□ြရ□□□□□ □□□□□□□□□□□□□□□□□□□

'Difficulty in recording, calculation' was the next main problem for them and overload was also mentioned as another difficulty. With regard to recording and calculation, they mentioned a number of technical issues as follow.

- CVD risk □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□ ။ □□□□□□□□ □□□ □□□□□□□□ □□□□□□□ ၊ 40 နဲ႔ 79 □□□□□□□□□□ □□□□□□□ ။ < 39, > 80 □□□□ြေ□□□ ျ□□□□□ risk □□□ □□□□□□□□□□□□□□□□□□□ ၊
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- Form တစ္□□ □□□□□ □□ □□□□□□□□ □□□□□□□။ □□□□□□□ ၃ □□□□ □□□□□□□□□□□□□ Old / New □□□□ □□□□□□□□ □□□□□□□□□□
- CHC (Community Health Clinic) Report □□ New □□□□□ Screening Report □□□□□□□□□□□ □□□□ □□□□□□□□□□□တ□□□ ဥပမာ - 40 □□□□□ patient □□□□□□□□□□□ Risk □□□□ □□□□တဲ့ □□□□□ □□□ဂါ □□□□ □□□□□□□□ Screening □□□□□□□□□□□□□□□။ □□□□□□□□□□

Workload was related to staff shortage, time, magnitude of patients, busy with other duties such as:

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Lacking information on working definition and instructions were mentioned as one difficulty. The followings were explained / elucidated this aspect.

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The providers also said about requirement of too many papers to refer for filling one particular form.

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Other types of difficulties were also given.

- Form screening register □□□□□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□
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Most of the difficulties were reported by staff from RHCs and sub RHCs. While all types of BHS said about finding difficulties relating to NCD forms (from Forms 1 to 6), most of the PHS II complained with stock book for medicines.

The providers who found difficulties with regards to recording the forms, they were asked how did they solve such problems.

Table 19. Way of solving difficulties in recording forms by type of facility in all study townships (n = 62 providers) → C6

Type of difficulties (multiple responses)	No. of providers by facility type				
	MCH n = 8	RHC n = 23	Sub RHC n = 28	Special clinic n = 3	Total No. (%)
Worked together among staff	4	12	11	2	29 (46.8)
Solved by self	5	10	15	1	31 (50)

Most providers could overcome by working together (46.8%) and/or solving by themselves (50%) (Table 19). They shared the tasks among BHS, clarified with the patients, made notes at the margin of the forms, referred the old records and worked over time to solve these problems.

The followings expressed how some of them had solved their difficulties.

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Table 20. Reported reasons for not having difficulties in recording forms by type of facility in all study townships (n = 69 providers) → C7

Reasons (multiple responses)	No. of providers by facility type			
	MCH n = 8	RHC n = 32	Sub RHC n = 29	Total No. (%)
Had experiences	5	13	20	38 (55.1)
Received help from superiors	4	13	7	24 (37.8)
Worked with team	0	1	0	1 (1.5)
Cooperated from patients	0	4	1	5 (7.3)

Among those who did not find any difficulties in recording the forms, having experiences in recording (55.1%) and getting helps from the seniors (37.8%) were the main reasons (Table 20). They had referred manual, chart, checklist, old register when filling the forms and/or they had good relationship / rapport with the patients to get necessary information.

Awareness about PEN intervention

The providers were asked about the criteria of NCD patients to be treated at PEN clinics, number of implementing PEN clinics in their townships and the days for NCD service delivery.

Knowledge about criteria of NCD clients for treating at PEN clinics (Section B - 3)

Table 21. Providers' knowledge about criteria of clients for treating at PEN clients (n = 131)

Know criteria	No. of providers by type of BHS					
	HA	LHV	Midwife	PHS II	Trained nurse	Total
Correct	9	9	44	33	1	96 (73.3)
Incorrect	2	5	17	11	0	35 (26.7)
Total	11	14	61	44	1	131

Table 19A. Knowledge about criteria of PEN clients by type of respondents

Know criteria	No. of providers by type of BHS						Clients No. (%)
	HA	LHV	Midwife	PHS II	Trained nurse	Total	
Correct	9	9	44	33	1	96 (73.3)	
Incorrect	2	5	17	11	0	35 (26.7)	
Total	11	14	61	44	1	131	260

Most of the BHS, particularly midwives and PHS II could answer the correct criteria of NCD clients to be treated at PEN clinics, i.e., 40 years and above patients with any risk factor for NCDs. One-fourth of the BHS gave other answers (i.e., incorrect answers) such as treating all NCD patients of any age, elderly NCD patients (but could not tell the age), elderly persons, and all types of patients visited to clinic (Table 21).

NCD service day: opening day for PEN services

NCD service day was asked for clinic-based PEN services and outreach PEN services.

Table 22. Reported opening day of PEN clinics in study townships by type of facility (n = 131 providers) (Section B – 13)

Reported days	No. of providers who reported opening days of PEN clinics				
	MCH n = 16	RHC n = 55	Sub RHC n = 57	Special clinic n = 3	Total No. (%)
At clinic					
1 day a week	11	21	19	0	51 (38.9)
2 to 5 days a week	5	25	26	3	59 (45.04)
7 days a week	0	9	12	0	21 (16.03)
At outreach service					
1 day a week	4	10	12	1	27 (20.6)
2 to 5 days a week	1	8	7	2	18 (13.7)
Do not provide	5	5	11	0	21 (16.03)
Other	6	32	27	0	65 (49.6)

Nearly half of the providers said they offered NCD services at their PEN clinic during 5 working days (week-days) and about 39% said they served once a week. Some said they opened the clinic for the NCD clients the whole week. As for outreach services, half of the staff said they gave outreach services occasionally such as once a month, when they had spare time while touring for routine ANC activities. Nearly one-fourth said outreach services were provided only one day per week and some said they never did outreach services (Table 22).

Regarding to the awareness of PEN clinics, the providers were also asked about NCD targets for PEN clinics.

Providers' awareness of NCD targets relating to PEN intervention

Table 23. Number of providers about awareness of NCD targets in study townships →B4

Know target	No. of providers by type of BHS				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Yes	0	6	3	0	9 (6.9)

No	16	49	54	3	122 (93.1)
Total	16	55	57	3	131

Table 24. Reported estimated number of NCD target patients → B5

Reported target number	No. of providers by type of facility				
	MCH n = 0	RHC n = 6	Sub RHC n = 3	Special clinic n = 0	Total n = 9
75		0	1		1
200 – 500		2	0		2
500 – 1000		1	0		1
1000 – 1500		2	2		4
>1500		1	0		1

Only 9 providers said that they knew about the NCD targets, and all of them were from RHCs and sub RHCs (Table 23). Of them, 7 said they estimated from previous information such as prevalence of last year, screening data, number of patients visited to clinic, estimated number of population of 40 years and above. One respondent said the target was not given. When asking about the estimated target NCD patients, they answered inconsistent number of patients (Table 24).

Table 25. Providers' reasons for not knowing the NCD targets by type of facility in all study townships → B7

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n = 16	RHC n = 149	Sub RHC n = 54	Special clinic n = 3	Total n = 122
Did not receive training	6	11	22	3	42 (34.4)
There was no NCD target	3	16	15	3	37 (30.3)
Forgot what was told about target	6	6	11	0	23 (18.9)
Only HA knew the target	0	4	0	0	4 (3.3)
Did not know target because engaged with other duty	0	1	2	0	3 (2.5)
No need target because all NCD patients were treated	0	1	0	0	1 (0.8)
Other	0	1	2	0	3 (2.5)

As shown in table 25, not receiving PEN training and not having NCD target were the reasons given by the most of the providers. About 19% admitted that though they had attended the training,

they forgot what was told. A few of them said they did not know the target because only HA knew about it and/or they had engaged with other duty and/or they treated all NCD patients.

Table 26. Reported number of screened new patients during last 3 months (n = 128) → B8

Reported number of patients	No. of providers by type of facility				
	MCH n = 16	RHC n = 53	Sub RHC n = 56	Special clinic n = 3	Total No. (%)
1 – 50	10	25	46	3	84 (65.6)
50 – 100	3	16	9	0	28 (21.9)
100 – 150	3	2	0	0	5 (3.9)
150 – 200	0	5	0	0	5 (3.9)
200 – 250	0	5	1	3	6 (4.7)

Table 27. Source of clients' information about exiting of PEN clinic for screening → B9

Source	No. of providers by type of facility (n = 128)				
	MCH n = 16	RHC n = 53	Sub RHC n = 56	Special clinic n = 3	Total No. (%)
While clients visiting to clinic for NCDs	4	26	29	2	61 (47.7)
From other villagers	12	22	20	0	54 (42.2)
From health staff during outreach services, field visits for ANC / immunization / etc., at Elderly care clinic	10	31	31	0	72 (56.3)
From signboard at clinic	3	10	13	0	26 (20.3)
By case detection during outreach services and/or field visits	0	1	1		2 (1.6)
While clients visiting to clinic for other diseases rather than NCDs	0	2	0	1	3 (2.3)
Other	0	2	3	0	5 (3.9)

The providers mentioned that the clients were aware of PEN clinic mostly from the health staff, either by staff directly or by other ways (Table 27).

Table 28. Reported number of diagnosed patients among screened new patients during last 3 months (n = 128) → B 10

Reported number of patients	No. of providers by type of facility				
	MCH n = 16	RHC n = 53	Sub RHC n = 56	Special clinic n = 3	Total No. (%)
Diabetes					

0	5	19	27	0	51 (39.8)
1 – 15	11	31	29	3	74 (57.8)
15 – 30	0	3	0	0	3 (2.3)
Hypertension					
0	0	0	4	0	4 (3.1)
1 – 15	13	41	48	3	105 (82.03)
15 – 30	3	3	2	0	10 (7.8)
30 – 45	0	2	2	0	4 (3.1)
45 – 60	0	4	0	0	4 (3.1)
>60	0	1	0	0	1 (0.8)
CRD					
0	16	42	39	0	97 (75.8)
1 – 15	0	9	1	0	10 (24.2)

➔ No. of diagnosed patients for all types of cancer = 0

Table 29. Reported number of treated patients among diagnosed patients during last 3 months (n = 128) → B 11

Reported number of patients	No. of providers by type of facility				
	MCH n = 16	RHC n = 53	Sub RHC n = 56	Special clinic n = 3	Total No. (%)
Diabetes					
0	5	18	20	0	43 (33.6)
1 – 15	11	31	29	3	74 (57.8)
15 – 30	0	3	0	0	3 (2.3)
30 – 45	0	0	0	0	0
> 45	0	0	1	0	1 (0.8)
Hypertension					
0	0	1	4	0	5 (3.9)
1 – 15	13	41	40	3	97 (75.8)
15 – 30	3	3	2	0	10 (7.8)
30 – 45	0	2	3	0	5 (3.9)
>45	0	4	0	0	4 (3.1)

Table 30. Reported number of referred patients among diagnosed (**and treated → to confirm**) patients during last 3 months (n = 128) → B 12

Reported number of patients	No. of providers by type of facility				
	MCH n = 16	RHC n = 53	Sub RHC n = 56	Special clinic n = 3	Total No. (%)
Diabetes					
0	16	47	51	3	117 (95.1)
1 – 5	0	5	1	0	6 (4.9)
Hypertension					
0	13	52	50	3	118 (92.9)

1 – 5	3	0	3	0	6 (4.7)
5 – 10	0	0	2	0	2 (1.6)
10 – 15	0	0	1	0	1 (0.8)

➔ No. of referred patients for all types of cancers = 0

I don't have idea how to interpret the findings from Tables 24 to 30, except tables 25 and 27.

Awareness about PEN clinics in the study townships (section B 2)

The providers were asked how many facilities of each facility type, except hospitals, were functioning as PEN clinics in their township.

Table 31. Providers' awareness about number of PEN clinics by type of facility in all study townships (n = 131 providers) (section B - 3)

Responses about PEN clinics (multiple responses)	No. of providers by facility type				
	MCH n = 16	RHC n = 55	Sub RHC n = 57	Special clinic n = 3	Total No. (%)
All MCHs were PEN clinics	16	51	51	3	121 (92.4)
All RHCs were PEN clinics	8	33	33	3	77 (58.8)
All sub - RHCs were PEN clinics	14	34	55	1	104 (79.4)
Special clinic was PEN clinic	0	1	1	1	3 (2.3)
All MCHs were not PEN clinics	0	2	3	0	5 (3.8)
All RHCs were not PEN clinics	0	0	1	0	1 (0.8)
All sub RHCs were not PEN clinics	0	4	4	0	8 (6.1)

A large number of staff answered that all MCHs and sub RHCs from their respective township were PEN clinic, and about 59% knew that the RHCs as PEN clinics. As for special clinic, only 3 staff from Kun Hein township described that the special clinic was PEN clinic (because Kun Hein township alone has this type of clinic). A very few (1 to 8 providers) said that not all health facilities were serving as PEN clinics (Table 31). At the same time, there were providers who did not know that facilities were implementing as PEN clinics – 20 providers about opening PEN clinics at RHCs, 2 BHS about sub RHCs, 1 staff about MCH and 1 staff about special clinic respectively.

Opinion on community regarding PEN clinics

Community utilization of PEN clinics

All 131 service providers said the community had utilized their NCD services delivered at PEN clinic.

Barriers by community for getting NCD services at PEN clinics

When the providers were asked whether community had barriers to get NCD services from their facility, majority (71.8%) said the community had not faced with barriers (Table 32).

Table 32. Number of providers about opinion on barriers by community for getting NCD services at PEN clinics in study townships

Barriers	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Yes	4	17	14	2	37 (28.2)
No	12	38	43	1	94 (71.8)
Total	16	55	57	3	131

Table 33. Providers' reasons for not having barriers by community for getting NCD services at PEN clinics by type of facility in all study townships (n = 94) → section J - 4

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Facility is not far for community	8	24	30	0	62 (65.9)
Clinic opening day is convenience for community	3	13	15	0	31 (32.9)
Outreach service day is convenience for community	2	1	2	0	5 (5.3)
Clinic opening hour is convenience for community	4	18	13	1	36 (38.3)
Outreach service hour is convenience for community	0	0	2	0	2 (2.1)
Transportation is good	3	9	16	1	29 (30.9)
Community receive medicines free of charge	2	16	11	0	29 (30.9)
Good services	2	9	5	0	16 (17.02)
Facility had enough equipment	0	2	3	0	5 (5.3)
Other	1	2	4	0	5 (5.3)

Among providers who said there were no barriers for community to get services at their facility, they gave reasons as facility was located within reachable distance for the community, free NCD services, transportation was good, clinic's opening days and working hours were convenient for the community (Table 33).

Causes of barriers were asked to the providers who reported having barriers by community including clients for receiving NCD services at PEN clinic.

Table 34. Providers' reasons for having barriers by community for getting NCD services at PEN clinics by type of facility in all study townships (n = 37) → Section J - 3

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Equipment were not sufficient	21	4	2	0	27 (72.9)
Facility is far from clients' home	3	8	6	1	18 (48.7)
Transportation was bad	1	6	4	2	13 (35.1)
Medicines were not sufficient	0	4	4	0	8 (21.6)
Clinic opening day is not convenience for clients	1	0	0	0	1 (2.7)
Other	2	4	4	0	10 (27.03)

Most of the providers gave similar reasons for not having barriers, but in other way with negative aspect – equipment, distance of facility, transportation problem, insufficient of medicines and inconvenience of clinic opening days. Ten providers responded that staff shortage, language barriers and not feasible for elderly to visit the clinic due to distance and having no accompany to go to the clinic were also barriers for the community (Table 34).

Community acceptance of PEN clinics

All 131 service providers responded that community accepted NCD services delivered at their PEN clinics.

Table 35. Providers' reasons for community acceptance of NCD services at PEN clinics by type of facility in all study townships (n = 131) → J 6

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Facility can provide full PEN services at clinics and outreach	19	50	56	3	128 (97.7)
Facility had enough equipment for performing investigations	14	55	52	1	122 (93.1)
Facility had enough NCD medicines to provide FOC	11	44	46	3	104 (79.4)
Facility can organize to fulfill the clients' needs	11	43	42	4	100 (76.3)

Facility had full trained staff	4	25	17	2	48 (36.6)
Working days and hours for NCD services is convenience for community	6	17	15	0	38 (29.01)
Community had knowledge about NCDs	0	8	3	0	11 (8.4)
Community like services provided at the facility	0	2	8	0	10 (7.6)
I have enough skill	3	4	2	0	9 (6.9)
I'm willing to provide NCD services	0	1	2	0	3 (2.3)
I have enough time to provide the services	1	2	0	0	3 (2.3)
Other	0	3	3	0	6 (4.6)

With full strength of trained staff, provision of medicines, equipment and other needs like staff paid attention and gave advice were the main reasons for the community's acceptance. Community awareness about the disease and services, and positive attitude of individual provider towards services were also among the reasons (Table 35).

Providers' opinion towards sustainability of PEN clinics

Table 36. Opinion on sustainability of PEN clinics in study townships → k 7

Sustain PEN clinic	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Yes	14	53	50	2	119 (90.8)
No	2	2	7	1	12 (9.2)
Total	16	55	57	3	131

About 91% of the staff said there were a possibility that the PEN clinics could be sustained (Table 36). Midwives and PHS II, especially from RHCs and sub RHCs had positive view on this aspect.

Table 37. Providers' reasons for able to sustain PEN clinics by type of facility in all study townships (n = 119) → k 8

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n = 14	RHC n = 53	Sub RHC n = 50	Special clinic n = 2	Total No. (%)

Facility has enough medicines	8	19	25	1	53 (44.5)
Facility had enough equipment for investigations	7	22	23	1	53 (44.5)
Community's interest	1	13	13	0	27 (22.7)
Facility had full trained staff	2	11	11	1	25 (21.01)
I have enough skill and qualification for NCDs	1	6	8	1	16 (13.5)
Being a health provider to perform PEN project	1	8	6	0	15 (12.6)
NCDs are priority diseases	3	6	4	0	13 (10.9)
I'm willing to provide NCD services	2	2	3	0	7 (5.9)
Facility can offer NCD services at clinic and outreach	1	2	2	0	5 (4.2)
Can be sustained if some conditions were provided	0	4	2	0	6 (5.04)
I have enough time to provide Full PEN services	2	0	3	0	5 (4.2)
Other	1	8	3	0	12 (10.1)

Varity of reasons were mentioned why the PEN clinics could be sustained (Table 37). Again, adequacy of medicines and equipment were the basic needs for sustainability. They also identified the importance of community's interest and individual provider's optimistic attitudes towards the NCD services.

Among the reasons, though the number was small, while 15 providers stated that being a health staff, they would continue serving the patients, which in turn PEN clinics could be sustained, 12 BHS expressed their different views on sustainability such as having facility to treat NCDs at village level, having community participation.

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Thirteen providers said since NCDs became priority disease because of increasing number of NCD patients, PEN clinics could be sustained to treat these patients. They explained as follow:

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About 5% thought if the requirements were fully supplied, if the staff were stationed at the facility permanently, sustainability of PEN clinics would be likely. They said;

- ေဆးနဲ႔ေဆးပစၥည္းေတြ မျပတ္လွ်င္ဂ်ဳနာေတြ က အျမဲလာေနမွာပဲ ။ ဒါေၾကာင့္ ေရရွည္ျဖစ္ႏိုင္မယ္ထင္ တယ္

Table 38. Providers' reasons for not able to sustain the PEN clinics by type of facility in all study townships (n = 12) → K 9

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n = 2	RHC n = 2	Sub RHC n = 7	Special clinic n = 1	Total No. (%)
I don't have enough skill and qualification for NCDs	2	2	7	1	12 (100)
Facility had no enough medicines for NCDs	2	1	5	1	9 (75)
Facility had no enough equipment to do necessary investigation	1	1	5	0	7 (58.3)
Facility had no full trained staff	1	3	4	0	6 (50)
Staff were over load and busy	0	1	4	0	5 (41.7)
Facility had no basic amenities	0	0	3	0	3 (25)
I need further training	0	0	1	0	1 (8.3)
I need supportive team members	0	0	1	0	1 (8.3)
Other	0	1	1	0	2 (16.7)

All 12 providers, who expected of no feasibility about sustainability of PEN clinics, felt that individually, they lacked skill regarding NCD services. More than half said shortage of essential medicines and equipment for NCDs were also the reasons. Staff-related reasons were also affected for not possibility (Table 38).

Opinion on expansion of PEN clinics

Table 39. Opinion on expansion of PEN clinics in study townships → section K - 10

Expansion of PEN clinic	No. of providers by facility type				Total No. (%)
	MCH	RHC	Sub RHC	Special clinic	
Yes	16	54	53	3	126 (96.2)
No	0	1	4	0	5 (3.8)
Total	16	55	57	3	131

Nearly all providers (96.2%), particularly from RHCs and sub RHCs said PEN clinics could be expanded in future to other health facilities. Of them, most were midwives and PHS II (Table 39).

Table 40. Providers' reasons for able to expand PEN clinics by type of facility in all study townships (n = 126) → section K - 11

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n = 16	RHC n = 54	Sub RHC n = 53	Special clinic n =3	Total No. (%)
NCDs are priority diseases	7	26	22	1	56 (44.4)
Positive view of community	4	15	14	0	33 (26.2)
Facility had enough NCD medicines	2	15	11	2	30 (23.8)
Facility had enough equipment	1	7	6	1	15 (11.9)
Can expand if specific conditions were provided	2	4	8	0	14 (11.1)
Facility had enough trained staff on NCDs	2	4	3	1	10 (7.9)
Facility had full staff	1	0	0	1	2 (1.6)
Other	2	4	8	0	14 (11.1)

The providers who said it was able to expand the PEN clinics gave reasons of possibilities (Table 40). Among the reasons, 'NCDs are disease of high rank' was mentioned by nearly half of the providers, followed by positive community awareness towards disease itself and its service delivery at facility, such as having enough equipment and medicines for giving NCD services. About 10% of the respondents pointed out staff-related factor as another key aspect for expansion.

'If condition' was also mentioned – 11.1% stated that as long as medicines would be issued uninterruptedly, if the staff would receive PEN training, then the expansion was not a problem. Following reasons were reflected the given reasons.

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- ဒီျမိဳ့နယ္မွာ PEN service □□□□□□□□□□□□□ □□□□□□□□□□□ငွ့ တစ္ျ□□□ □□□□□□□□□□□□□□နွ ေ□□□□□ □□□□□□□□့ □□□□□□□□□□□□□□□□□□□□။

Table *. Providers' reasons for not able to expand the PEN clinics by type of facility in all study townships (n = 5) → K – 14 → **this table will be dropped in FINAL REPORT**

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n = 0	RHC n = 1	Sub RHC n = 4	Special clinic n = 0	Total No.
Facility had not enough NCD medicines	0	0	1	0	1
Transportation was no good	0	0	3	0	3
All facilities were already working as PEN clinics	0	0	1	0	1
Language barrier	0	1	2	0	3

Only 5 providers from RHC and sub RHCs said PEN clinics were not to be able to expand, and the main reasons were poor transportation and language barrier / difficulty in communication between health staff and the community, especially in Kun Hein township.

Proposed health facility for NCD service delivery as PEN clinic

The providers who responded likelihood for expansion of PEN clinics were requested to propose the suitable type of health facility for expansion.

Table 41. Providers' proposed suitable facility as PEN clinics by type of facility and BHS in all study townships (n = 126) → K 12

Proposed facility	No. of providers by type of facility				
	MCH n = 16	RHC n = 54	Sub RHC n = 53	Special clinic n = 3	Total No. (%)
Township hospital	4	4	7	0	15 (11.9)
Station hospital	1	0	2	0	3 (2.4)
MCH	1	1	1	0	3 (2.4)
RHC	6	29	19	2	56 (44.4)
Sub RHC	2	16	21	0	39 (30.9)
NCD special clinic	2	4	3	1	10 (7.9)

Most of the providers proposed RHCs and sub RHCs with the reasons that it would be more convenience for those from rural community due to several barriers. Only some mentioned about the hospitals (Table 41).

- Sub center □□□□□□□□□□□□□□□□□□□□□□□□□□
- □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□
  Sub center က □□□□□□□□□□□□□□□□□□□□□□□□□□

Interestingly, 10 staff said to serve NCDs by opening new NCD special clinic, where staff can mainly emphasis on NCD patients only. They gave example for Elderly care health centre opening on Wednesdays.

Table 42. Providers' reasons for suitable facility as PEN clinics by type of facility in all study townships (n = 126) → K 13

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Being a hospital	9	15	20	2	46 (36.5)
Being RHC	4	18	13	2	37 (29.4)
Being sub RHC	3	14	13	2	32 (25.4)
Easily accessible to facility	0	8	8	0	16 (12.7)
Can take care of many population	0	4	2	0	6 (4.8)
Other	0	4	3	0	7 (5.6)

The providers had their own reasons for proposing the specific facility for the PEN clinic (Table 42). Among them, while most focused on facility type, some thought of assessable and coverage. A very few gave other reasons for choosing the facility such as because of the native health provider and able to give service for those living in hard-to-reach areas.

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- ေဆးရုံ □□□ ကြ်မ္းက်င္တဲ့သူပို မ်ားတယ္
- RHC □□□ PEN clinic □□□□□□□ RHC □□□□□□□□□□ □□□□□□ Sub RHC □□□□□□□□□□□ PEN services
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Suitable BHS for NCD services at PEN clinic

When the providers were asked to suggest a combination of BHS to work as a team for each NCD, a variety of team formations were mentioned as shown in following table.

- ➔ **The following table can be dropped or shown in Annex in Final Report.**
- ➔ **(Please confirm)**

Table *. Proposed team formation of BHS for specific NCD services at PEN clinic (n = 131)

Type of NCD	No. of providers who proposed type of BHS for team formation				Total
	Work by individual BHS	Form with 2 types of BHS	Form with 3 types of BHS	Form with ≥ 4 types of BHS	
Diabetes	HA (4) Midwife (1) PHS II (3)	LHV, MW (1) MW, PHS II (14)	HA, LHV, MW (19) HA, LHV, PHSII (3) LHV, MW, PHS II (1)	HA, PHS I, LHV, MW, PHS II (34) HA, LHV, MW, PHSII (19) HA, PHSI, LHV, MW (2)	106
TOTAL	8	15	28	55	
Hypertension	HA (3) Midwife (1) PHS II (1)	LHV, MW (1) MW, PHS II (17)	HA, LHV, MW (13) HA, LHC, PHSII (2) HA, MW, PHSII (2) LHV, MW, PHSII (4)	LHV, PHSI, MW, PHSII (44) HA, LHV, MW, PHSII (21) HA, PHSI, LHV, MW (2) HA, PHSI, LHV, MW, PHSII, TN (1)	112

TOTAL	5	18	21	68	
CRD	HA (20) PHS II (1)	LHV, MW (1) MW, PHS II (4)	HAM PHS I , LHV (1) HA, PHSI, LHV (1) HA, PHSI, MW (23) HA, LHV, PHS II (1) HA, MW, PHSII (3) LHV, MW, PHSII (1)	LHV, PHSI, MW, PHSII (28) HA, LHV, MW, PHSII (14) HA, PHSI, LHV, MW (1)	99
TOTAL	21	5	30	43	
Breast cancer	HA (2) LHV (2) Midwife (5)	LHV, MW (48) MW. PHS II (5)	HA, LHV, MW (13) LHV, MW, PHS II (8)	LHV, PHSI, MW, PHSII (25) HA, LHV, MW, PHSII (7) HA, PHSI, LHV, MW **(1 / 4)**	116
TOTAL	9	53	21	33	116
Cervical cancer	HA (3) LHV (2) Midwife (6)	LHV, MW (49) MW, PHSII (4)	HA, LHV, MW (16) LHV, MW, PHSII (3)	LHV, PHSI, MW, PHSII (23) HA, LHV, MW, PHS II (6)	112
TOTAL	11	53	19	29	
Oral cancer	HA (14) MW (1) PHS II (3)	MW, PHS II (6)	HA, PHS I, PHS II (2) HA, LHV, MW (9) HA, MW, PHS II (2) LHV, MW, PHS II (3)	LHV, PHS I, MW, PHS II (38) HA, LHV, W, PHSII (17)	95
TOTAL	18	6	16	55	
CVD	HA (10) MW (5) PHS II (4)	LHV, MW (3) LHV, PSH II (1) MW, PHS II (9)	HA, LHV, MW (11)	LHV, PHS I, MW, PHSII (42) HA, LHV, MW, PSH II (18)	103
TOTAL	19	13	11	60	

Note Figure in brackets refer to the number of providers who proposed type of BHS for the specific NCD

Regardless of the NCD types, most BHS identified HA, LHV, midwife and PHS II as team members. Majority of the respondents recommended 3 or more types of BHS to be worked together for the specific NCD – 63 providers for diabetics, 89 for hypertension, 73 for CRD, 54 for breast cancer, 48 for cervical cancer, 71 for oral cancer, and 71 for CVD. From 5 to 19 staff said that individual BHS would be suitable to give services, whereas, LHV was only suggested for breast cancer and cervical cancer because these are type of women's diseases. On the other hand, whatever the team combination, PHS II were recommended for almost all NCDs.

The underlying causes of identifying PHS II as one team member for all types of NCDs were:

- HA, PHS II □□□□□□□□□ MCH □□□□ □□□□□□ □□□□□□□□□□□ မ□□□□□□□□□□□ □□ NCD ေ□□□□□□□□□□ □□
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- PHS II □□ □□□□င□□□□□□□□□□□□□□□ NCD က □□□က □□□□□□□□□□□ HA □□□ PHS II □□□□□□□□□□□□ □□□□□□□□ □□□□□
- DM □□□ Hypertension □□□ □□□□□□□□□□□□□□□ Midwife (□□□□) PHS II တစ္ေ□□□□□□□□□□□□□□ □□□□ □□□ □□□□□□□□□□□□□□□□ပါ ။ ဒါေ□□□□□□□□ Midwife □□□ PHS II □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ ။

Table 43. Providers' reasons of team formation for specific NCD services at PEN clinics by type of facility in all study townships (n = 131) → K 6

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n = 16	RHC n = 55	Sub RHC n = 57	Special clinic n = 3	Total No. (%)
Need to work in team	11	29	26	0	56 (42.8)
Being a female staff	4	17	16	1	38 (29.01)
Being a male staff	2	24	18	1	45 (34.4)
Being BHS	1	9	12	0	22 (16.8)
Being trained staff	1	9	6	1	17 (12.9)
Being a skillful senior staff	2	4	4	1	11 (8.4)
Requirement of many staff for outreach	1	0	2	0	3 (2.3)
Other	1	0	3	0	4 (3.1)

Table 44. Providers' reasons of tem formation for specific NCD services at PEN clinics by type of BHS in all study townships (n = 131) → K 6

Reasons given by BHS	No. of providers by type of facility

(multiple responses)	HA n = 11	LHV n = 14	Midwife n = 51	PHS II n = 44	Trained nurse n = 1	Total No. (%)
Need to work in team	6	9	31	20	0	56 (42.8)
Being a female staff	2	4	17	22	0	45 (34.4)
Being a male staff	4	2	17	15	0	38 (29.01)
Being BHS	1	3	11	7	1	22 (16.8)
Being trained staff	1	2	8	6	0	17 (12.9)
Being a skillful senior staff	1	3	4	3	0	11 (8.4)
Requirement of many staff for outreach	0	2	1	0	0	3 (2.3)
Other	0	0	3	1	0	4 (3.1)

Except special clinic, nearly all providers from other facility types proposed to work as a team (Table 43) and most were given by midwives and PHS II (Table 44).

The reasons were given based on disease nature, gender issue, responsibility of service provider. For instance, when they would need to make decision, because of skill and experience of the staff, about half thought working team would be formed. For some diseases like oral cancer, hypertension, they thought male staff were appropriate. For breast cancer and cervical cancer, LHV and midwife were mostly recommended.

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Preparedness of NCD services at PEN clinics

Preparedness of PEN clinics was assessed by readiness of NCD services providing at the clinics. It was determined by the presence of NCD medicines with valid expiry date and functioning equipment used / needed for NCD services, whether the services had been providing by the trained staff using guide lines and SOP for the NCDs.

NCD-related printed materials

Guidelines and SOP about screening, investigations, treatment and referral for the specific NCDs were already identified in TOT manual. The manual was provided to all attendees at multiplier PEN training. If the staff could show the manual, the facility was recorded as having such materials. During the observation process, guidelines and SOP were found at all facilities.

Year and month of receiving TOT manual was reported as from February 2017 to October 2018, which was different from the actual training period (see page 7). However, nearly all respondents (43 of 50) said they received TOT manual from PEN training at township.

The list of medicines was not provided to the PEN clinics, and the stock list of NCD medicines (for PEN project) was included in the monthly report to the Township Health Department.

However, the staff were asked about the list whether they were aware of 7 essential NCD medicines used for PEN clinics.

As shown in table 45, out of total 50 facilities, only 4 sub RHCs from Kyeik Hto township had the list of NCD or PEN medicines that were prepared by themselves. Of which, 3 were midwives and 1 was PHS II. The list was not seen at other facilities. Half of the facilities said they did not know to prepare the list and they had to be observational with only a few items of NCD medicines, mostly, Amlodipine 5 mg, Metformin 500 mg and Gliclazide 80 mg (see Table 45). BHS from 17 facilities mentioned that they did not receive any instruction to prepare the list. Only 3 sub RHCs admitted that they were told to make the list by their seniors, yet the task was not done. Most staff explained why they did not prepare the list as follow.

- [illegible]
- [illegible] List [illegible]
- [illegible]
- Stock [illegible]
- Stock [illegible]
- NCD က [illegible] / [illegible] ယ့

Table 45. Reported situation of preparing list of NCD medicines by types of facility and BHS in study townships

Reported situation	Type of BHS	Number of BHS by health facility				Total facilities
		MCH	RHC	SC	Special clinic	
Observed	3 MW 1 PHS II	0	0	4	0	4
Neither observed nor prepared	4 HA 2 LHV 17 MW 3 PHS II	3	6	16	0	25
Neither observed nor received instruction	4 HA 2 LHV 9 MW 1 TN	1	5	10	1	17
Did not prepare yet	1 HA 2 MW	0	1	2	0	3
Other	1 MW	0	0	1	0	1
Total		4	12	33	1	50

Availability of essential NCD medicines and equipment at PEN clinics

Existing condition of the medicines

Reported medicines used at the PEN clinics

Table 46. Reported NCD medicines used at PEN clinics by type of facility (n = 131) → B14

Type of medicines	Type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Amlodipine 5 mg	13	52	57	3	125 (95.4)
Atenolol 50 mg	4	8	10	1	23 (17.6)
Enalapril 5 mg	0	8	5	0	13 (9.9)
Metformin 500 mg	13	49	47	2	111 (84.7)
Gliclazide 80 mg	10	31	30	2	73 (55.7)
Aspirin 75 mg	2	8	12	1	23 (17.6)
Atorvastatin 10 mg	2	3	4	0	9 (6.9)

Majority of providers reported that their facility had used Amlodipine 5 mg and Metformin 500 mg and about 56 % said they used Gliclazide 80 mg. Enalapril 5 mg and Atorvastatin 10 mg were the least items answered using by less than 10% of BHS. Of which, MCHs said they did not use Enalapril and Special clinic did not utilise both items (Table 46).

Observed medicines at the PEN clinics

The presence of medicines and equipment was mainly focused on their situation on the day of data collection, regardless of the supply sources. Table 47 shows the situation of medicines observed on the day of data collection.

Collectively, in all study townships, all 7 essential medicines at the facilities were observed with valid date. Of which, Metformin was observed with valid date at more than half of the facilities (34 / 50) and Gliclazide and Amlodipine came next (21 and 19 facilities respectively). Other medicines were found with valid expiry date at 1 to 4 facilities. They described why their stock was full of medicines as follow.

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On the other hand, at the time of observation, at 5 facilities, Amlodipine was found that the expiry date was almost close, and at 2 facilities, it was already expired on the day of data collection. Atenolol was found with valid date at 11 of 50 facilities and one sub RHC reported receiving it during 2019, but not found on the assessment day. When asked, she thought that it was misplaced. With regard to stock-out condition, while Amlodipine was run out at nearly half of the facilities (23 facilities), the condition of other NCD medicines were more or less the same (ranged from 12 to 17 facilities). Atorvastatin was not in the stock at 6 facilities. Except Gliclazide, not more than 3 facilities said they received inadequate amount of NCD medicines. Even these medicines were

stock out, they did not indent since such items were rarely used at their facilities. About 30 % of facilities said though the medicines were indented, they did not receive them yet. A few facilities said in order to provide the service, they refilled the stock out medicines by themselves, i.e., they had to buy the medicines with their own money.

With regard to indenting conditions, even for the same type of medicine, a small number of providers (ranged from 1 to 7) mentioned different issues. A few facilities said from the time of PEN project implementation, except Amlodipine, though other essential medicines were indented, they did not receive them. At the same time, except Amlodipine and Metformin, other medicines were not indented by a small number of facilities since the project was started saying that these items were the type of low utilization at their facilities. On the other hand, 1 to 3 facilities said even though they had indented Metformin, Gliclazide, Aspirin and Atorvastatin, the items were never issued, accordingly, they never indented these items again.

As for conditions of receiving medicines, Enalapril, Aspirin and Atorvastatin were mentioned by most facilities that they never received them since the beginning of the PEN project or the facility itself neither indented to township hospital nor issued from the township level. They bought with own expense when necessary. One sub RHC stated that they received Aspilet 80 mg for Aspirin and one RHC received Aspirin 80 mg from **door-to-door system.** (**what does this mean?**)

The causes of medicine shortage were explored during the observation and some were as follow.

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- [illegible] [illegible] ॥ [illegible]
- [illegible] ॥ [illegible]
- [illegible] sub centre [illegible]
- [illegible] । [illegible] ॥ [illegible] [illegible] ॥ [illegible]
- [illegible] [illegible] [illegible] [illegible] [illegible] Request [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
- [illegible] [illegible] Fund / [illegible] [illegible] (သို့) [illegible] [illegible]
- [illegible] [illegible] [illegible]
- [illegible]
- [illegible] (၃) [illegible] [illegible] training [illegible]
- [illegible] [illegible] [illegible] (၃) [illegible] [illegible] [illegible] (i.e., Amlodipine, Metformin and Gliclazide)
- Project [illegible] [illegible] । [illegible] [illegible] ॥ [illegible] [illegible]
- [illegible] [illegible]

Table 47. Observed situation of essential medicines for NCDs at PEN clinics in all study

townships (n = 50 facilities)

Type of medicines	Observed situation by type of facility				
	Observed with valid date	Observed, but expired	Reported, but not seen	Stock out	Indenting and Receiving conditions[1]
Amlodipine 5 mg	MCH – 2 RHC – 5 SC – 16 Clinic - 1 Total = 24	RHC – 1 SC – 1 Total – 2	0	MCH – 2 RHC – 5 SC – 16 Total – 23	RHC – 1 Total – 1
Atenolol 50 mg	MCH – 2 RHC – 2 SC – 7 Total = 11	0	SC – 1 Total = 1	RHC – 5 SC – 12 Total = 17	MCH – 2 RHC – 5 SC – 14 Total = 21
Enalapril 5 mg	RHC – 1 SC – 4 Total = 5	0	0	RHC – 4 SC – 7 Clinic - 1 Total = 12	MCH – 4 RHC – 7 SC – 22 Total = 33
Metformin 500 mg	MCH – 3 RHC – 7 SC – 23 Clinic – 1 Total = 34	0	0	MCH – 1 RHC – 4 SC – 9 Total = 14	RHC – 1 SC – 1 Total = 2
Gliclazide 80 mg	MCH – 1 RHC – 4 SC – 15 Clinic – 1 Total = 21	0	0	MCH – 2 RHC – 4 SC – 10 Total = 16	MCH – 1 RHC – 4 SC – 8 Total = 13
Aspirin 75 mg	RHC – 1 SC – 5 Total = 6	0	0	MCH – 2 RHC – 4 SC – 8 Total = 14	MCH – 2 RHC – 7 SC – 20 Clinic - 1 Total = 30
Atorvastatin 10 mg	RHC – 1 Total = 1		0	MCH – 1 RHC – 1 SC – 4 Total = 6	MCH – 3 RHC – 10 SC – 29 Clinic – 1 Total = 43

Note Zero value means no response for the particular medicine

Generally, the reported medicines utilized at the clinics and observed NCD medicines were found evenly matched. Amoldipine 5 mg, Metformin 500 mg and Gliclazide 80 mg were the common items reported and found with valid date at most facilities.

Existing condition of equipment

Reported equipment used at the PEN clinics

[1] Included following issues - Indented but not issued since project started, Indented and never issued, thus never indented again, Did not indent and received whatever issued, Never indented since project started and Did not indent since the item was rarely used, Not receiving since project started, and Received alternative item

Table 48. Reported NCD equipment used at PEN clinics by type of facility (n = 131) → B15

Type of equipment	Type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Glucometer	16	53	57	3	129 (98.5)
Glucometer strip	15	50	56	3	124 (94.7)
BP cuff	15	48	53	3	129 (98.5)
Lipid Analyser	0	8	1	0	9 (6.9)
Lipid analyser strip	0	5	1	1	7 (5.3)
Lancing device	4	20	23	1	48 (36.6)
Weighing machine	7	35	38	2	82 (62.6)

The providers reported that Glucometer and its strips, and BP cuff were the main equipment used at the PEN clinics, followed by the weighing machine. Using of Lipid analyser and its strips were reported only by less than 7% of the providers, mostly from RHCs (Table 48).

Observed condition of equipment

During the observation process, various situations were found, particular for lipid analyser and its strips, urine albumin / protein test and urine glucose / sugar (Table 48).

As a whole, glucometer and its strips, BP cuff, and lancing device and weighing machine were found in functioning condition at majority of the facilities (above 70% of facilities). Other items were able to use at only a very few facilities. The reasons given were more or less the same among providers as:

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Even the facilities did not receive such equipment from township level, the responsible staff said they managed in different ways to be able to use the equipment, especially for BP cuff, weighing machine and urine albumin / protein test. If the specific item was damaged or run out, in order to provide NCD services, they repaired or refilled them with their own expense without waiting till the intended item was delivered. In addition, for NCD services, they also used the equipment issued for other activities such as MCH, antenatal care (AN care), nutrition.

Only a small number of facilities had problems of not being able to use the equipment. The main issues were that the equipment was not working, the expiry date of the consumable accessories, were close when the equipment, for instance, glucometer strips, were issued and having no necessary accessories for the particular equipment, such as no batteries, no solution for lipid analyser, and received strips with unmatched codes for the glucometer, etc.

Only one or two facilities reported they received lipid analyser strip, lancing device, albumin / protein test strips or solutions and urine glucose / sugar test strips or solutions. However, at the time of observation, the tools were not found and the responsible staff said the equipment were mixed up with other midwives.

Strips were found shortage for glucometer and lipid analyser at 7 and 2 facilities respectively. Moreover, the solutions for testing urine albumin/protein and urine sugar/glucose were also run out at all types of facilities. Although the staff said they had indented, still, the items were not received.

With regard to the indenting of equipment, about 30% of facilities did not indent the lipid analyser and the strips. Also, about 20% of facilities did not ask for urine albumin / protein test and urine glucose / sugar test strips. They mentioned that facilities were not received such items since the beginning of the project implementation or although they submitted the indent form, the items were not issued and verse versa**.**

About 20 PEN clinics of all facility types said that lipid analyser and its strip, urine albumin / protein test strips and urine glucose / sugar test strips were never issued from the township level since beginning of the project implementation.

A very small number of all facility types, said lipid analyser, urine albumin / protein test and urine glucose / sugar were not utilized, and accordingly, they neither indented nor received them. The reason was that they lacked technical-know-how about using these equipment mentioning that they were not taught at the PEN training.

The responsible providers told about the reasons behind of such events.

- lipid analyzer □□□□ □□□□□□□□ □□□□□□□□□□ ၊ □□□□□□□□□□□□□ Expire ျ□□□□□□□
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- glucometer □□□ glucometer strip က □□□□□□□□□□ □□□□□□□□□□ ။ □□□□□□□□□□□ □□□□□□□□□□

Table 49. Overall observed situation of equipment for NCDs at PEN clinics in all study townships (n = 50 facilities)

Type of equipment	Observed situation by type of facility					
	Observed and functioning	Observed, but not functioning	Reported, but not seen	Stock out	Indenting & Receiving condition[2]	Technical aspect
Glucometer	MCH – 4 RHC – 12 SC – 32 Clinic – 1 Total = 49	SC – 1 Total = 1	0	0	0	0
Glucometer strip	MCH – 2 RHC – 10 SC – 28 Clinic – 1 Total = 41	MCH – 1 SC – 1 Total = 2	0	MCH – 1 RHC – 2 SC – 4 Total = 7	0	0
BP cuff	MCH – 4 RHC – 10 SC – 25 Clinic – 1 Total = 40	RHC – 1 SC – 6 Total = 7	0	0	RHC – 1 SC – 2 Total = 3	0
Lipid Analyser	RHC – 3 Total = 3	MCH – 1 RHC – 5 Total = 6	0	0	MCH – 3 RHC – 1 SC – 32 Total = 36	RHC – 3 SC - 1 Clinic – 1 Total = 5
Lipid analyser strip	0	RHC – 5 Total = 5	RHC – 1 Total = 1	RHC -2 Total = 2	MCH – 3 RHC – 2 SC – 32 Total = 37	MCH – 1 RHC – 2 SC - 1 Clinic – 1 Total = 5
Lancing device	MCH – 4 RHC – 11 SC – 32 Clinic – 1 Total = 48	0	RHC – 1 SC – 1 Total = 2	0	0	0
Weighing machine	MCH – 4 RHC – 12 SC – 30 Clinic – 1 Total = 47	SC – 1 Total = 1	0	0	SC – 2 Total = 2	0
Urine albumin / protein test	RHC – 4 SC – 8 Total = 12	MCH – 1 RHC – 2 SC – 2 Clinic - 1 Total = 6	SC – 1 Total = 1	0	MCH – 2 RHC – 5 SC – 21 Total = 28	MCH – 1 RHC – 1 SC – 1 Total = 3
Urine glucose / Sugar	RHC – 2 SC – 5 Total = 7	MCH – 1 RHC – 2 SC – 3 Clinic – 1	SC – 1 Total = 1	0	MCH – 3 RHC – 7 SC – 23 Total = 33	RHC – 1 SC – 1 Total = 2

[2] Included the following issues - Never indented again because never issued, Neither indented nor issued, and Indented, but not issued since project started

		Total = 7				

Note Zero value means no response for the particular equipment

Similar to the medicines, existing types of equipment reported and observed were also matched – while most facilities had BP cuff, glucometer and its strips in working condition, only a few had lipid analyser and its strips.

Refilling the shortages

Table 50. Reported types of refilling the essential medicines and equipment for NCDs by type of facility in study townships (n = 131 providers)

Types of refilling (Multiple responses)	Essential medicines		Equipment	
	No.	%	No.	%
Received from higher level	64	48.9	64	48.9
Bought by using different funding sources	27	20.6	18	13.7
Bought by staff with own expense	28	21.4	25	19.1
Bought by patients	4	3.1	2	1.5
Shared among facilities	0		1	0.8
Don't know	0		1	0.8

When asked about the way of refilling, nearly half of the providers said they received both medicines and equipment from township. About one-fourth of the staff refilled medicines by either using funds or buying by themselves. Similar situation was reported for stocking up the equipment – indenting to township, buying with their own expense or solving by their own way. Only one RHC said they shared the equipment among facilities when they were out of stock (Table 50). The explanations regarding the equipment were:

- Glucose strip □□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□ □□□□□□□ □□ရှင် အျ□□□□□□□□□□□ □□□□□ □□□□□□□□□□□□□□□□□□□□ □□□□ □□□ □□□□□□□□□□□□□□□□□□□□
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- Glucometer တစ္ေ□□□□□ တစ္□□□□ □□ □□□□□□□□□□ ၊ strip □□□ machine □□□ က reliable □□□□□□□□□□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□□□□□□□□

Readiness of NCD services at PEN clinics

Table 51. Number of providers about opinion on readiness of PEN clinics in study townships by facility type → Section K - 1

Readiness of PEN clinic	No. of providers by type of facility				Total No. (%)
	MCH	RHC	Sub RHC	Special clinic	
Yes	10	34	37	3	84 (64.1)
No	6	21	20	0	47 (35.9)
Total	16	55	57	3	131

More than half of the providers (64.1%) thought their facilities were ready for delivering NCD services (Table 51), and among them, most were midwives and PHS II from RHCs and sub RHCs. At the same time, some of the BHS from RHCs and sub RHCs admitted that they were not ready yet.

The providers were asked why their facility was ready to deliver the services, and they gave a number of reasons.

Table 52. Providers' reasons for readiness at PEN clinics by type of facility in all study townships (n = 84) → Section K - 2

Reasons given by BHS (multiple responses)	No. of providers by type of facility				
	MCH n =10	RHC n = 34	Sub RHC n = 37	Special clinic n = 3	Total No. (%)
Facility had enough medicines for NCDs	7	25	27	3	62 (73.8)
Facility had adequate equipment	4	27	29	1	61 (72.6)
Facility had full staff	3	17	8	1	29 (34.5)
Facility had enough trained staff on NCDs	1	8	9	1	19 (22.6)
Facility can do all necessary investigations for NCDs	2	4	4	0	10 (11.9)
I have enough skills and qualification for NCDs	3	4	2	0	9 (10.7)
I'm willing to provide NCD services	0	1	2	0	3 (3.6)
I have enough time to provide Full PEN services	1	2	0	0	3 (3.6)
Ready, if the necessary conditions were provided	1	2	0	0	3 (3.6)
Other	1	6	8	1	16 (19.1)

Sufficient of medicines and equipment were identified as key factors for readiness of the PEN services by a large number of staff (73.8% and 72.6% respectively). Staff availability, especially trained staff and ability of performing investigations came next. Although a number was small,

personal attitude was also revealed – willingness and able to give time for offering the services (Table 52).

Three staff from MCH and RHC said the readiness could be attained if the health providers were always available or accessible at the facility, if medicines and equipment were provided continuously and regularly. About 19% mentioned that because of having a facility in their area, having permission to perform NCD services by their own, able to work NCD services together with other routines, having a good transportation, they thought PEN clinics were ready to serve the patients.

Forty-seven providers, who mentioned their facility were not ready, were asked for their explanations.

Table 53. Providers' reasons for not readiness at PEN clinics by type of facility in all study townships (n = 47) → Section K - 4

Reasons given by BHS (multiple responses)	No. of providers by type of facility			Total No. (%)
	MCH n = 6	RHC n = 21	Sub RHC n = 20	
Facility had not enough medicines for NCDs	6	19	15	40 (85.1)
Facility had not enough equipment	6	11	8	25 (53.2)
Facility had not full staff	2	3	4	9 (19.2)
Health staff were already overload	0	2	1	3 (6.4)
Facility had no trained staff for NCDs	0	0	1	1 (2.1)
Other	0	5	7	12 (25.5)

While majority of them said the facility had not enough NCD medicines, more than a little half said equipment was not adequate at their facility. A few providers said their facility did not have either full staff or trained staff on NCDs. Three staff said because of over work due to increasing NCD patients and engaging with other tasks, they were not able to focus on NCD services. Other factors also affected to this condition, such as facility had no basic amenities, staff were lacked of skill, poor community involvement in outreach services (Table 53).

Similar underlying causes for not ready were given by most of the staff as follow:

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Among those providers who reported readiness of the clinics, they were requested to state the types of NCD which were ready at their clinic.

Table 54. Type of NCD services reported for readiness by providers at PEN clinics by type of facility in all study townships (n = 84) → Section K - 3

Type of NCD services reported readiness (multiple responses)	No. of providers by type of facility				
	MCH n =10	RHC n = 34	Sub RHC n = 37	Special clinic n = 3	Total No. (%)
Diabetes	10	33	37	3	83 (98.8)
Hypertension	10	33	37	3	83 (98.8)
CRD	8	13	15	0	28 (33.3)
Breast cancer	8	15	16	0	39 (46.4)
Cervical cancer	6	7	7	0	20 (23.8)
Oral cancer	7	14	13	0	34 (40.8)
CVD	7	15	17	0	39 (46.4)

Table 55. Type of NCD services reported for readiness by providers at PEN clinics by type of BHS in all study townships (n = 84) → Section K - 3

Type of NCD services reported readiness (multiple responses)	No. of providers by type of BHS					
	HA n = 5	LHV n = 8	Midwife n = 39	PHS II n = 31	Trained nurse n = 1	Total No. (%)
Diabetes	5	8	38	31	1	83 (98.8)
Hypertension	5	8	38	31	1	83 (98.8)
CRD	4	4	17	11	0	36 (42.9)
Breast cancer	5	3	21	10	0	39 (46.4)
Cervical cancer	3	2	8	7	0	20 (23.8)
Oral cancer	5	3	17	9	0	34 (40.5)
CVD	5	3	18	13	0	39 (46.4)

Among 84 providers who reported readiness at PEN clinics, almost all of them stated that their health facility was ready for diabetes and hypertension. Except from special clinic, overall, about less than half of the providers from other facility types reported that they had also organised the services for other NCDs (Tables 54 and 55).

Responsiveness of providers towards NCD services

In order to identify required non-health matters to focus for further improvement of NC services at PEN clinics, opinion on sub elements of 6 main responsiveness towards NCD services – dignity, autonomy, confidentiality, prompt attention, basic amenities, and choice of care provider were questioned. Various measurements relating to the responsiveness were presented in following tables in terms of rating, types of performance and mean values of each main responsiveness.

Table 56. Types of reported responsiveness by service providers and clients in study townships

Responsiveness	No. of providers (n = 131)			
	Never	Sometimes	Usually	Always
Dignity				
Treating patients with respect	1	2	38	90
Encouraging patients to discuss about NCDs	1	18	36	76
Encouraging patients to ask about NCDs	1	10	44	76
Showing privacy during treatment and examinations	25	10	30	66
Autonomy				
Providing information on alternative treatment options	19	37	34	41
Making consultation about patient's alternative treatment options	17	20	31	63
Seeking patient consent	0	4	29	88
Confidentiality of clients' information				
Protecting patient's confidentiality about taking treatment	6	12	28	85
Keeping information provided by patients confidentially	4	4	60	63
Keeping patients' medical records confidentially	4	0	21	96
Prompt attention				
Reasonable waiting time for treatment / consultation at facility	44	76	9	2
Choice of care provider				
Individuals have a choice between health providers in health facility	21	10	15	85
Individuals have a choice between health facilities	20	7	11	93
Individuals have the opportunity to see a specialist	0	9	13	109

Table 57. Types of reported responsiveness regarding prompt attention by service provider's in study townships

Responsiveness	No. of providers			
	< 25%	25% - 49%	50% - 75%	> 75%
Percent of total population who accessed health facility services	6	10	37	78
Percent of total population who knew about accessing care for NCDs at health facility	1	13	47	70

Table 58. Types of reported responsiveness regarding basic amenities by service provider's in study townships

Responsiveness	No. of providers (n = 131)			
	Very poor	Poor	Good	Very good
Cleanliness of health facility	7	4	110	10
Maintenance of buildings in health facility	7	10	94	20
Adequacy of furniture in health facility	2	22	97	10
Access to clean water at health facility	2	15	93	21
Cleanliness of toilets in health facility	3	7	98	23

Generally, majority of providers rated most elements by positive scales – usually, always, good and very good for all types of sub elements of responsiveness (Table 56 to 58). When looking each type of responsiveness, there were some providers evaluated poorly about some sub elements like giving privacy to the patients' treatment and examination, waiting time to get services, allowing the patients to make decisions for treatment and choice of health provider.

To know the health facilities' types of performing with regard to the elements of responsiveness, main elements of responsiveness were classified into 2 groups - respect for person element and client orientation element (see Table 9). Then, for each main element of responsiveness, all sub elements were categorized into best and worst performing.

Table 59. Type of responsiveness performing relating to dignity by type of facility in all study townships (n = 50 facilities)

Type of sub element of dignity	Types and no. of facility with best performance score	Types and no. of facility with worst performance score
Treating patients with respect	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC
Encouraging patients to discuss about NCDs	4 MCHs, 12 RHCs, 30 sub RHCs, 1 Special clinic	3 sub RHCs
Encouraging patients to ask about NCDs	4 MCHs, 12 RHCs, 29 sub RHCs, 1 Special clinic	4 sub RHCs
Showing privacy during treatment and examinations	4 MCHs, 11 RHCs, 26 sub RHCs, 1 Special clinic	1 RHC, 7 sub RHCs

Table 60. Type of responsiveness performing relating to autonomy by type of facility in all study townships (n = 50 facilities)

Type of sub element of autonomy	Types and no. of facility with best performance score	Types and no. of facility with worst performance score
Providing information on alternative treatment options	4 MCHs, 11 RHCs, 24 sub RHCs	1 RHC, 9 sub RHCs, 1 Special clinic
Making consultation about patient's alternative treatment options	4 MCHs, 12 RHCs, 30 sub RHCs, 1 Special clinic	3 sub RHCs
Seeking patient consent	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1sub RHC

Table 61. Type of responsiveness performing relating to confidentiality by type of facility in all study townships (n = 50 facilities)

Type of sub element of confidentiality	Types and no. of facility with best performance score	Types and no. of facility with worst performance score
Protecting patient's confidentiality about taking treatment	4 MCHs, 12 RHCs, 31 sub RHCs, 1 Special clinic	2 sub RHCs
Keeping information provided by patients confidentially	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC
Keeping patients' medical records confidentially	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC

Table 62. Type of responsiveness performing relating to prompt attention by type of facility in all study townships (n = 50 facilities)

Type of sub element of prompt attention	Types and no. of facility with best performance score	Types and no. of facility with worst performance score
Percent of total population who accessed health facility services	4 MCHs, 12 RHCs, 33 sub RHCs, 1 Special clinic	
Percent of total population who knew about accessing care for NCDs at health facility	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC
Reasonable waiting time for treatment / consultation at facility	3 RHCs, 5 sub RHCs	4 MCHs, 9 RHCs, 28 sub RHCs, 1 Special clinic

Table 63. Type of responsiveness performing relating to basic amenities by type of facility in all study townships (n = 50 facilities)

Type of sub element of basic amenities	Types and no. of facility with best performance score	Types and no. of facility with worst performance score
Cleanliness of health facility	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC
Maintenance of buildings in health facility	4 MCHs, 12 RHCs, 31 sub RHCs, 1 Special clinic	2 sub RHCs
Adequacy of furniture in health facility	4 MCHs, 12 RHCs, 26 sub RHCs, 1 Special clinic	7 sub RHCs
Access to clean water at health facility	4 MCHs, 12 RHCs, 29 sub RHCs, 1 Special clinic	4 sub RHCs
Cleanliness of toilets in health facility	4 MCHs, 11 RHCs, 31 sub RHCs, 1 Special clinic	1 RHC, 2 sub RHCs

Table 64. Type of responsiveness performing relating to choice of care provider by type of facility in all study townships (n = 50 facilities)

Type of sub element of choice of care provider	Types and no. of facility with best performance score	Types and no. of facility with worst performance score
Individuals have a choice between health providers in health facility	4 MCHs, 12 RHCs, 24 sub RHCs, 1 Special clinic	9 sub RHCs
Individuals have a choice between health facilities	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC

Individuals have the opportunity to see a specialist	4 MCHs, 12 RHCs, 32 sub RHCs, 1 Special clinic	1 sub RHC

Overall, nearly all health facilities fall into best performing scores for all main elements of responsiveness (Table 59 to 64). However, conditions relating to patients' privacy and selection of treatment option and health persons and waiting time were not as good as other elements at some RHCs and sub RHCs.

Table 65. Mean Responsiveness scores towards NCD services at PEN clinics of service providers by type of health facility (n = 50 facilities)

Responsiveness	Mean ± SD by type of facility			
	MCH	RHC	Sub RHC	Special clinic
Dignity	8 ± 1.83	7.9 ± 1.7	8.1 ± 1.8	6.3 ± 1.5
Autonomy	8.1 ± 1.9	8.4 ± 1.8	8.2 ± 1.8	9.3 ± 1.2
Confidentiality	9.5 ± 0.8	8.9 ± 1.5	8.6 ± 1.9	9 ± 1.7
Prompt attention	7.8 ± 2.04	8.3 ± 1.4	8.02 ± 1.7	5.7 ± 1.2
Basic amenities	6.3 ± 1.9	7.5 ± 1.8	7.1 ± 2.1	5.7 ± 1.2
Choice of care provider	9.6 ± 0.8	9.1 ± 1.2	8.9 ± 1.5	8 ± 2.7

In combination of all study townships, apart from basic amenities, mean scores of other main responsiveness were high for all facility types. By type of facility, generally, mean scores of most of the responsiveness for MCHs, RHCs and sub RHCs were higher than special clinic. Regarding autonomy and confidentiality, special clinic got high mean scores than other facilities (Table 65).

Suggestions

In order to improve NCD services delivered at the PEN clinics, the providers gave a number of suggestions.

Table 66. Providers' suggestions to improve NCD services at PEN clinic by type of facility from all study townships (n = 131) → k 15

Suggestions (Multiple responses)	Type of facility				
	MCH	RHC	Sub RHC	Special clinic	Total No. (%)
Medicines should be sufficient	12	44	34	1	91 (69.5)
Equipment should be sufficient	10	35	27	1	73 (55.7)
Need further PEN training	4	13	15	1	33 (25.2)
To increase community awareness about NCDs through media	3	7	6	0	16 (12.2)
To provide NCD pamphlets with ethnic language	2	3	7	0	12 (9.2)
Need more staff	5	4	3	0	12 (9.2)

Need adequate recording forms for NCDs	0	5	3	0	8 (6.1)
To open NCD clinic day specifically	0	1	3	0	4 (3.1)
To arrange more mobile clinics / outreach services	0	2	1	0	3 (2.3)
Other	1	3	8	0	12 (9.2)

Most of the providers pointed out that sufficiency of medicines and equipment (69.5% and 55.7%) was important. About one-fourth thought the need of advanced technical issues for NCDs through further trainings. Some said widely publicised dissemination about NCDs should be considered by means of media and/or using ethnic language to enhance their awareness. To provide the services more effectively, they also suggested to appoint more staff, to provide simple and clear recording forms adequately, to arrange opening the PEN clinics on a specific day and establishing more outreach services (Table 66).

The following descriptions illustrated their suggestions.

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Discussion and Conclusion

BHS are the key health workers for the rural people to provide comprehensive health care. They are kind of multipurpose workers to take care of routine duties as well as additional **tasks / jobs**, and PEN intervention is not an **exception / exemption** for them.

Findings indicated both strengths and weakness with regard to PEN intervention. Community acceptance and utilization of PEN clinics were high in study townships. From the health care providers side, almost all BHS admitted the possibilities of service readiness, expansion and maintenance / sustainability of NCD services at the PEN clinics, where RHCs and sub RHCs were proposed as the suitable facilities for PEN expansion since these peripheral health facilities could take care of rural people. Majority of the providers proposed to work as a team with BHS for delivering NCD services, recommending midwives and PHS II as the key health workers for PEN intervention.

As the increasing of NCD patients in their areas, they had positive attitudes towards NCD services with highly passion to provide NCD services. The responses of the BHS showed that being the health workers, they have responsibility / obligation to take care and treat all types of patients though they were instructed to provide NCD services once a week, generally on Wednesday.

On the other hand, further improvement would be need for training, availability of the services, and supply system for medicines and equipment.

The trainers of PEN project gave multiplier training to the BHS with the use of training manuals and guidelines. However, there were some obstacles for the health workers to perform NCD services at some facilities – staff with no PEN training, staff shortage due to several reasons, attachment of newly appointed PHS II to hospitals, poor understanding about recording the NCD forms, lacked knowledge of using some devices and inability to perform all FULL NCD services. They overcome these by referring the training manual, working in team, and getting guidance from the seniors.

In study townships, only diabetes and hypertension were the two main NCDs that were capable for almost all BHS and were ready to offer these two NCDs at the PEN clinics. Other NCD services required hi-tech qualification, which were not able to provide at peripheral level. At the same time, clients taking treatment for diabetes and hypertension at the clinics were outnumbered than other NCDs. While vinyl about available of free NCD services, which were mainly focused on diabetes and hypertension was erected at most PEN clinics and Flow chart of PEN procedure (although the flowchart was not distributed to the facilities at the time of study) was displayed at some facilities, the community were also informed about service available during the outreach services could be the facts that the facilities had to deal with more on these diseases.

Consequently, medicines and equipment that had to be utilised for diabetes and hypertension were the most items indented by the facilities. The observation process also revealed that while some medicines were neither received even the items were indented nor issued from township level since the beginning of PEN intervention, some items were never indented. Majority of staff felt that the facilities required to indent only regular utilized items for NCDs such as Amlodipine 5 mg, Metformin 500 mg and Gliclazide 80 mg, and this condition may be confined of such indenting situation.

In addition, among the supplies, it was noted that some facilities received medicines with close expiry date and/or already expired medicines and/or inadequate amount, unmatched accessories for some devices like strips for the glucometers and lipid analysers.

Fail to indent from the peripheral level, and irregular, inadequate and incompatible provision mechanism from the township level indicated of weak supply system between township and peripheral level. Hence, need-based distribution of medicines and equipment for the individual facility should be considered.

These conditions show that preparedness of the NCD services at most PEN clinics from the study townships were not much satisfactory.

Regardless of study design, health facility types and study time, other studies conducted with the health persons focusing on diabetes and hypertension reported similar situations regarding the preparedness of NCD services. They found that at the health facilities - primary health cares in South India, commune health stations in urban Hanoi and public health facilities in Tanzania - not only the availability of guidelines, medicines, diagnostic equipment were stocked out or inadequate, training, and reporting systems were weak as well. Collectively, weak health system in lower level health facilities, scared resources, poor experience and skill of health staff regarding service provision were the key aspects for these limitations[22, 23, 24]. Concerning with the medicines, one Kenyan study done with the patients also supported this point that though they could get free medicines from the government facilities, the availability of medicines at the public health facilities presented with a constant challenge of shortages with medicines[25].

Effectiveness of NCD services delivered at PEN clinics does not always include provision of training and guidelines, medicines and equipment, because awareness and availability of necessary elements should also be needed to fulfil the clients' expectations, in other words, responsiveness is also important as the preparedness for the PEN intervention.

Regarding responsiveness, the findings indicated that privacy was lacked from the providers' side. This could be due to structure of facility building; they did not have separate room or place to consult and treat the patients with privacy. With regards to the waiting time to get NCD services, patients' choice of treatment and service providers, such elements got poor scores. Since these types of facilities were of peripheral level, the facilities were the only available health centres with the limited number of providers in their locality. Additionally, due to nature of Myanmar rural people, they rarely take treatment with people outside their areas because of transportation, reluctant to go to hospitals and to communicate with strangers. Hence, although the health providers suggested to get alternative treatment options, there were small numbers of providers

performed poorly in the responsiveness domain of autonomy and choice of health care providers. Overall, although the numbers were not too large, RHCs and sub RHCs were in the poor condition regarding these domains that would need to pay more attention.

One WHO key informant survey conducted with 50 government and non-government employees from 35 countries found that autonomy, confidentiality and choice of care providers were similar between countries: low rating for autonomy in many countries, high scores for confidentiality in countries with rich resources, and choice between health care units scores better than choice of health care provider within single unit. On the other hand, prompt attention was rated as the worst sub element due to limited resources, both financial and human. They explained that rating of elements were affected by the resource available, where prompt attention and quality of basic amenities were resource dependent than other elements[18].

Similar findings were noted among the service users. A study done with insured users in Nigeria found that while the users were satisfied with dignity and choice of provider of the health care services, they rated lower contentment on all other domains particularly autonomy and prompt attention. The authors pointed out that public providers performed poorly in the respective domains when compared to private providers due to several factors such as quality of services, attitudes of the providers, decision making process, and quality of health facility[26].

Generally, the BHS were not so familiar with the PEN implementation even almost all BHS from the study facilities involved in the study had attended township level PEN training. The training documents and lectures assisted them to a certain level, however, did not reflect well enough to carry the BHS to the implementation level. As discussed above, a number of aspects affected to these discrepancies.

However, to some extent, with the enthusiasm of the BHS towards NCD services, especially by the midwives and PHS II, the possibilities of improvement of PEN clinics were recognised. At the same time, they were the most recommended BHS by their colleagues to perform the NCD services. WHO also supported this issue by enhancing the nursing and midwifery capacity as professionals and a part of multi-disciplinary team to help prevent, screen and detect NCDs, treat and rehabilitate those suffering such diseases, and to reduce the associated risk factors as a primary-care approach[27]. Similar to this concept of task shifting, in Bangladesh, with the supports from the Ministry of Health - capacity building and training, medical supplies, service providers, logistics and other inputs, community clinic approach for NCDs control has been implementing as integral part of health system by both government and community where health assistants were service providers in addition to their domiciliary services[28] and in Jordan using Ministry of Health staff as the providers to monitor and treat NCDs and prevent complications[29]. These articles on community clinic approach showed that as other health professionals, midwives are capable to provide NCD services for the community. These studies also highlighted that regardless of the type of service providers, the success of NCDs management for the rural people could not be achieved without capacity building prior to implementation of such intervention, and provision of medical suppliers and technical inputs.

Overall, training scheme, recording issues, supply system for medicines and equipment and some responsiveness domains of privacy, prompt attention and choice of care providers were found as

the priority areas for further improvement. At the same time, a considerable suggestions and explanations for readiness, sustainable and expansion of PEN clinics were also crucial elements for the success of PEN intervention.

In conclusion, to achieve the goal of PEN intervention – sustain and expansion, all significant / relevant measures that would contribute to both preparedness and responsiveness should be improved since these elements are inter-related for every health facility. Further, though some limitations with training scheme, recording issues, supply system for medicines and equipment and some responsiveness domains of autonomy, prompt attention, confidentiality are existing, with the midwives and PHS II as the potential key implementers, through the expansion and sustainability of the PEN clinics, the integration of PEN intervention to PHC of Myanmar could be able to accomplish in near future.

Recommendations

- A series of multiplier training for all BHS, both trained staff and newly appointed staff, should be given
- Need-based supply system for medicines and equipment should be established
- The facilities should be well equipped with all essential materials like medicines, equipment, technical knowledge and skill
- Existing NCD forms should be developed / modified as simple and clear forms

Limitations

- All eligible staff could not be interviewed because of unavailable or attached to other facility at the time of data collection
- All facilities were not involved in Kun Hein township where some facilities are locating in remote areas or inaccessible areas
- Language barriers in some facilities

References

1. Ministry of Health and World Health Organization. Health System Assessment for Universal Health Coverage, Myanmar. 2012
2. World Health Organization – *Non-communicable Diseases (NCD) Country Profiles*, 2011
3. World Health Organization – *Non-communicable Diseases (NCD) Country Profiles*, 2014
4. World Health Organization – *Non-communicable Diseases (NCD) Country Profiles*, 2016
5. Ministry of Health. Republic of Zambia. Zambia Service Availability and Readiness Assessment 2010: Summary Report
6. Ministry of Health and Social Welfare. Tanzania Service Availability and Readiness Assessment (SARA), 2012, FINAL REPORT. July 2013

7. Ministry of Health. Uganda Service Availability and Readiness Assessment 2013: Summary Report: Key findings in figures
8. Le Le Win, Thae Maung Maung, Su Latt Tun Myint, Theingi Myint, Yin Thet Nu Oo, Thet Thet Mu. Nation-wide Service Availability and Readiness Assessment (SARA), Myanmar, 2015. Ministry of Health
9. Thae Maung Maung, Khin Thet Wai, Moe Thida, Kyaw Lwin Show, Phyo Aung Naing, Kyaw Min Htut. Primary Health Care Systems Strengthening in Hlegu Township at Yangon Region, Myanmar: Baseline Studies (2015 – 2016). March 2017. Ministry of Health and Sports
10. World Health Organization. Package of Essential Non-communicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings. 2010
11. Ministry of Health and Sports. 2017. Training of Trainer Manual for Package of Essential Non-communicable Disease Intervention (PEN)
12. Ministry of Health and Sports. Duties and Responsibilities of Basic Health Staff and Standard Operating Procedures. 1st edition, Department of Health. 2008
13. Ministry of Health and Sports. Health in Myanmar 2104
14. Charles Darby, Nicole Valentine, Christopher JL Murray and Amala de Silva. 2012. WHO: Strategy on measuring responsiveness. GPE Discussion Paper Series: no. 23 EIP / GPE / FAR, WHO
15. World Health Organization. Service Availability and Readiness Assessment (SARA): Reference Manual. 2013
16. NCDs: Tools for implementing WHO PEN (14) http://www.who.int/ncds/management/pen_tools/en/
17. World Health Organization. Health system responsiveness: Responsiveness questionnaires. 1999. Available from: URL: http://www.who.int/responsiveness/surveys/en
18. Amala de Silva and Nicole Valentine. 2000. Measuring responsiveness: results of a key informant survey in 35 countries. GPE Discussion Paper Series: No. 21. EIP / GPE / FAR, WHO)
19. What is Public Health Preparedness? Houston Department of Health and Human Services. https://www.houstontx.gov/health/OSPHP/About%20PHP/what%20is%/20PHP.pdf
20. What is Emergency Preparedness and Response? https://www.osha.gov/SLTC/emergencypreparedness/
21. World Health Organization. The World Health Report 2000
22. Maya Annie Elian, Manoj Kumar Pati, Praveenkumar Aivalli, et al. Preparedness for delivering NCD services in PHC: access to medicine for diabetes and hypertension in a district in South India. *BMJ Global Health, Vol. 2, Issues Suppl. 3, 2018.* http://gh.bmj.com/content/2/Suppl_3/e 000519
23. Vu Duy Kien, Hoang Van Minh, Kim Bao Giang, et al. Views by health professionals on the responsiveness of commune health stations regarding non-communicable diseases in urban Hanoi, Vietnam: a qualitative approach. *BMC Health Services Research, 2018, Vol. 18:392.* https://doi.org/10.1186/s12913-018-3217-4
24. Robert Peck, Janneth Mghamba, Fiona Vanobberghen, et al. Preparedness of Tanzanian health facilities for outpatient primary care of hypertension and diabetes: a cross-sectional survey. https://doi.org/10.1016/S2214-109X(14)7033-6

25. Monica Adhiambo Onyango, Taryn Vian, Isabel Hirsh, et al. Perceptions of Kenyan adults on access to medicines for non-communicable diseases: A Qualitative study. August 24, 2018. https://doi.org/10.1371/journal.pone.0201917
26. Shafiu Mohammed, Justo Lorenzo Bermejo, Aurelia Souares, et al. Assessing responsiveness of health care services within a health insurance scheme in Nigeria: users' perspectives. *BMC Health Services Research, 2013, vol. 13: 502*. https://doi.org/10.1186/1472-6963-13-502)
27. World Health Organization. Enhancing nursing and midwifery capacity to contribute to the prevention, treatment and management of non-communicable diseases. 2012
28. Community Based Health Care (CBHC). Available from: URL: http://www.communityclinic.gov.bd
29. Healthy Community Clinics for NCDs Control in Jordan. Available from: URL: http://www.clintonfoundation.org/.../health-community-clinics-ncds-jordan