Bhutan Insights Journal
https://bhutaninsights.com/

REVIEW ARTICLE

Enhancing Non-Communicable Disease Control: Implementation Experiences of the Service with Care and Compassion Initiative Across Four Districts in Bhutan

Karma Tenzin[1], Arpita Pradhan[2], Tandin Deki[3], Thinley Tobden[4], Kiran Gurung[5], Sherub Dorji[6], Kinley Dorji[7], Pema Lethro[8], Karchung Dukpa[9], Tshewang Lhadon[10]

[1]*Curtin Medical School, Curtin University, Perth, WA, Australia.*

[2]*Tashicholing Hospital, Samtse*

[3]*Murdoch University, Perth, Australia*

[4]*Sarpang Hospital, Sarpang, Bhutan*

[5]*Yebilaptsa Hospital, Zhemgang, Bhutan*

[6]*Eastern Regional Referral Hospital, Mongar, Bhutan*

[7]*Wangdicholing Hospital, Bumthang, Bhutan*

[8]*World Health Organization, Thimphu, Bhutan*

[9,10]*Department of Public health, Ministry of Health, Bhutan*

**Authors 1 & 2 both contributed equally, therefore considered as first authors of this paper.*

Corresponding author:
Karma Tenzin
karmatenzin2@curtin.edu.au

ABSTRACT

Noncommunicable diseases (NCDs) are a leading cause of death globally, responsible for 74% of all deaths, with a major impact on low- and middle-income countries. In Bhutan, NCDs accounted for nearly 69% of deaths in 2016, with cardiovascular diseases being the most significant contributor. Despite whole of government and society approach, the incidence of NCDs, such as hypertension and diabetes are on the rising trends, with many cases undiagnosed and poorly managed. To address this, Bhutan implemented the WHO Package of Essential Non-communicable Disease (PEN) interventions, later enhanced and rebranded as the Service with Care and Compassion Initiatives (SCCI) in 2021. The SCCI employs a 7Rs and 3Cs framework to improve NCD care at the primary healthcare level, focusing on holistic and patient-centered approaches. This paper studies the implementation of the SCCI in four Bhutanese districts—Bumthang, Mongar, Sarpang, and Zhemgang—highlighting the approaches utilized for the prevention and control of NCDs through this comprehensive framework of 7Rs and 3Cs.

Keywords: *Non-communicable disease; Hypertension; PEN package; SCCI; Whole of government.*

INTRODUCTION

Noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally. Each year, 17 million people die from NCD before age 70; 86% of these premature deaths occur in low- and middle-income countries. Of all NCD deaths, 77% are in low and middle income countries (1). The incidence of Non-communicable diseases (NCDs) in Bhutan is increasing and accounted for 69% of deaths in the country in 2016. Cardiovascular diseases (CVDs) is the highest cause of mortality followed by cancer, respiratory diseases and diabetes(2).

Worldwide, approximately 1.28 billion people aged 30-79 have hypertension, primarily in low and middle-income countries(3). In Bhutan, 30% of the population has raised blood pressure, with 59% unaware of their condition. Additionally, 5.6% of Bhutanese adults have elevated blood sugar levels, and among them, 59% are undiagnosed. The treatment control rate for these conditions is 25.5%, with 6.1% of adults aged 40-69 at high risk of cardiovascular events in the next decade based on WHO/ISH risk prediction charts(4).

The escalating burden of non-communicable diseases presents a major healthcare challenge globally, including in Bhutan (5). The government also developed a Multisectoral National Action Plan for the Prevention and Control of Noncommunicable Diseases (2015–2020), which urged further interventions to address NCD risk factors identified by PEN. Bhutan adopted the WHO Package of Essential Non-communicable Disease (PEN) intervention in 2009 and expanded it nationwide by 2023 (6). Since 2015, an enhanced version known as PEN HEARTs has

been implemented, later renamed in 2021 to Service with Care and Compassion Initiatives (SCCI), aimed at strengthening NCD service delivery at the primary healthcare level across the country (7).

The SCCI employs the 7Rs and 3Cs framework to prevent and control NCDs and engage communities across all 20 districts of Bhutan (7):

1. Robust Team: Enhances teamwork for patient-centered care by clarifying roles.
2. Recall and Reminder: Medical experts follow up with patients regularly and remind them to take medications.
3. Refill System: Saves time and money by enabling patients to refill medications locally.
4. Responsive Referral: Ensures seamless and quick patient transfers, with clear expectations between health workers and patients.
5. Reach-Out Services:

- Outreach: Provides screening and health education to at-risk individuals for early detection and prevention of NCDs.
- Monitoring: Supports chronic and bedridden patients, offering palliative and end-of-life care.

6. Reliable Supply: Ensures affordable essential medicines and technologies are consistently available.
7. Real-Time Monitoring, Supportive Supervision, and Peer Coaching: Essential for enhancing healthcare professionals' skills and knowledge, and keeping them updated on new systems (8).

However, in this paper, the focus was on the implementation of SCCI in the four districts of Bumthang, Mongar, Sarpang and Zhemgang upon approaches undertaken in prevention and control of NCDs through the SCCI framework which heavily relies on providing holistic care.

DESCRIPTION ABOUT SETTINGS

Bumthang, with adult population of over 17800, served by one hospital and five primary health care centers with 64 total health staffs with 1347 registered NCD cases, primarily hypertension patients (8, 9). The activity was implemented with distribution of educational materials, organizing health camps, conducting training programs for health workers where they were able to reach out to large number of people highlighting major risk factors such as high fat and salt intake and alcohol consumption. All the above activities were focused on 7Rs and 3Cs.

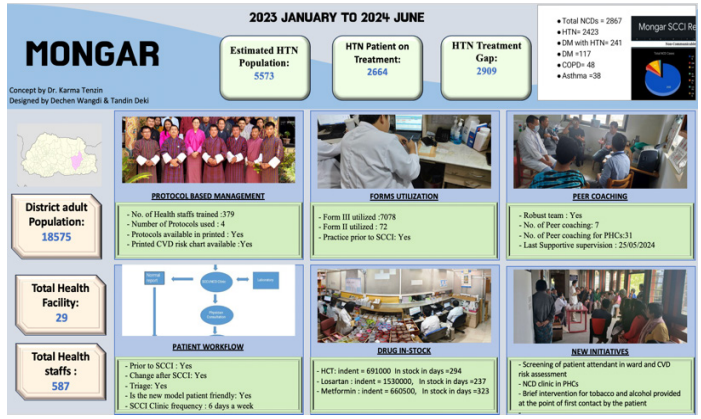

Figure 1. Non-communicable diseases factsheet for Mongar district.

Mongar with 18,575 adult population,29 health facilities which are manned by 587 total health staffs and caters to around 2900 registered NCD cases (8,10). The main approached adopted by the Mongar team are emphasizing on the strategies to address major risk factors, unhealthy diets and physical inactivity. After a dedicated and robust team was formed in response to SCCI;

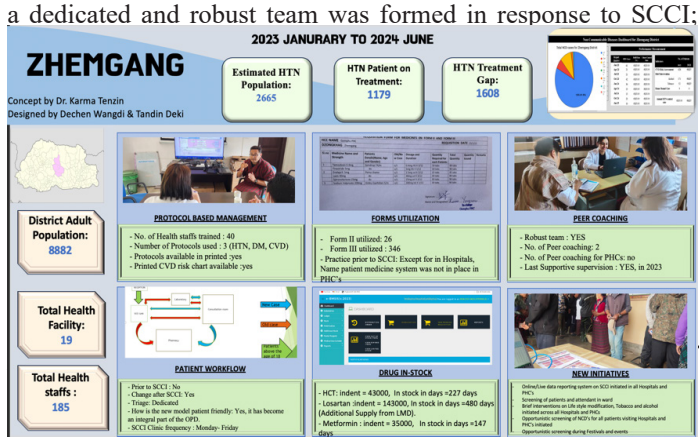

Figure 2. Non-communicable diseases factsheet for Zhemgang district.

Sarpang, located in the southern belt of Bhutan and sharing border with India, it is divided into 12 Gewogs with a total population of around 23000 adult population census record(2, 9, 12). The district has 13 health centers with a central regional referral hospital included. Initially a health staffs from CRRH and Sarpang hospital were given a five-day ToT training in Phuentsholing along with members of other Dzongkhang. These trained staffs then gave training to other staffs within their respective department. Following this, the core team conducted a 3-day training in 2 batches for staffs of the Primary Health Care centers of Sarpang Dzongkhang, Sarpang Hospital and CRRH. SCCI being a diverse approach, the non-clinical staffs (Reception, Administration, supporting staffs) were also trained irrespective of their designation as shown in figure 03.

Figure 3. Non-communicable diseases factsheet for Sarpang district.

A UNIQUE GOVERNANCE STRUCTURE IN SCCI IMPLEMENTATION

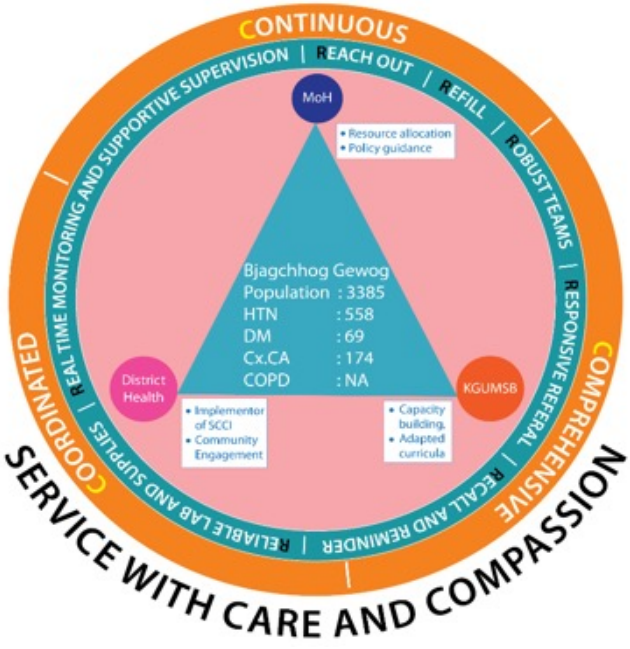

Figure 4. The 7 R's of SCCI.

Recognizing SCCI as a priority, the Ministry of Health formed a three-way partnership with District Health Authorities and KGUMSB to expand and scale up the initiative across all 20 districts in Bhutan.

As demonstrated above in figure 04, the Ministry provided leadership and served as the custodian of the overall vision, mobilizing resources crucial for implementation. KGUMSB, as an academic institute, contributed technical expertise, research capabilities, and data management, serving as a bridge between the Ministry and district health authorities. They supported districts with fieldwork and offered technical guidance to Ministry.

District health authorities played a pivotal role in translating the Ministry's vision and KGUMSB's capacity-building efforts into action within their respective districts. They were responsible for operationalizing the 7Rs and 3Cs framework, ensuring effective implementation of this concept on the ground.

WHO PEN to support people with NCDS through Universal Health Coverage (UHC) (13,14). UHC enables everyone to access the services that address the most significant causes of disease and death, and ensures that the quality of those services is good enough to improve the health of the people who receive them. Efficient use of limited health care resources, sustainable health financing mechanisms, access to basic diagnostics and essential medicines and organized medical information and referral systems are imperative for provision of equitable care for people with and at risk of NCDs(9, 15) también conocidas como enfermedades crónicas, suelen ser de larga duración y son el resultado de una combinación de factores genéticos, fisiológicos, ambientales y del comportamiento. Cada año mueren 41 millones de personas a causa de estas enfermedades, lo que equivale al 71% de todas las muertes en el mundo. Esta versión del Conjunto de intervenciones esenciales de la OMS contra las enfermedades no transmisibles para la atención primaria de salud se ha elaborado con el objetivo de integrar las ENT en la atención primaria de salud y de servir de apoyo a las reformas que deben trascender los elementos básicos del sistema nacional de salud. Proporciona protocolos y herramientas para las enfermedades crónicas que fortalecen la capacidad nacional de integrar y ampliar a mayor escala la atención de estas enfermedades en la atención primaria de salud. El conjunto de intervenciones esenciales de la OMS contra las ENT ayudará a mejorar la cobertura de los servicios adecuados para las personas que los necesitan en entornos de atención primaria.","author":[{"dropping-particle":"","family":"World Health Organization (WHO.

IMPLEMENTING NCDS CONTROL STRATEGIES WITH THE 7Rs APPROACH

1.Robust Team

In each of the four districts, a robust team with clearly defined roles for each member developed. These teams were led by the senior health assistant in Bumthang, pharmacist in Zhemgang, senior nurse in Mongar and dental surgeon in Sarpang. Furthermore, all the clinical and non-clinical staffs were trained to provide services to the NCD patients and homebound patients using the concept of 7Rs and 3Cs in their respective districts.

A strong team at Mongar benefited with redistribution of tasks (*task shifting*) among the team which made the services more dynamic, resulting in an overall change in approach to patient care and work environment. Increased interaction within the team further fostered further trust and confidence and also increased community-based support and cooperation.

The multidisciplinary approach *(team-based approach)* in Bumthang improved service delivery by moving away from the traditional single-focus method. Diabetic patients, for example, benefited from the combined expertise of a nutritionist and a doctor. Efficient communication ensured seamless care, preventing treatment gaps and reducing errors. Shared decision-making empowered healthcare professionals to make informed choices. A diverse team, including clinicians, researchers, and technology experts, brought unique perspectives and explored new modalities of service provision (*for instance, a patient as an educator*), diagnostic tools, and preventive strategies.

Robust team has aided Zhemgang with patient centered care, combating NCDs by understanding the patient's individual needs and preferences. With formation of patient flow system and a strong team, patients were able to interact with various health professionals such as clinicians, nutritionist, pharmacist, lab technicians and health assistants, therefore bringing high level of satisfaction to the patients with NCDs.

In Sarpang, a robust team fostered a sense of shared responsibility, enabling effective and efficient patient management despite limited resources. Team members from various departments created an effective system, ensuring each department understood its role. This multidisciplinary approach provided integrated services for the prevention, diagnosis, treatment, and management of NCDs. Clearly defined roles and responsibilities prevented overlaps and gaps, enhancing the team's overall strategy. This structure facilitated advocacy and screening, reaching a maximum number of patients and attendants, and coordinated efforts between remote primary health centers (PHCs) and district and regional hospitals.

2. Recall and reminder

In Mongar, either the patient or their village health workers were communicated via mobile whenever a patient misses the follow up deadlines. This resulted in majority of patients continued the medications, except for some proportion where it was difficult to contact.

Bumthang adopted a structured approach using patient cohorts based on specific NCDs and treatment plans. This allowed healthcare providers to organize and prioritize recall and reminder activities. For instance, diabetic patients were grouped for targeted interventions on medication adherence and blood glucose monitoring. A dedicated team ensured consistent follow-up with patients, fostering trust and compliance. Educating patients about their disease, treatment options, and lifestyle modifications encouraged active participation in their care, enhancing long-term health outcomes and ownership of their well-being.

In Zhemgang, efforts to personally contact patients missing their refills and checkups have faced challenges as of June 2024. Zhemgang being a small community, it is easy to trace and ask people about their medication and encourage responsibility by explaining the consequences of missing follow-ups. The focus has been on empowering patients in self-management and building trustful relationships.

Since SCCI started recently in Sarpang, the team haven't begun recalling and reminding patients yet, but they have plans to implement this effectively. Patients are being briefed at every appointment before leaving the SCCI clinic. They plan to use multiple communication channels, including SMS, phone calls, and mobile apps, to reach patients. For those who miss appointments, staff will make personal phone calls to emphasize the importance of attending.

3. Refill

Medication refills for NCDs are managed by key personnel at various levels. At primary levels, health workers handle refills using Form III, while pharmacists use Form II at higher levels.

In Mongar, a google sheet shared with the pharmacist streamlines the process, allowing patients to collect medications locally, saving time and travel costs. Bumthang also uses Google Sheets to track prescriptions and refill schedules, collaborating with higher-level facilities to ensure medication availability at district hospitals.

In Zhemgang, pharmacists manage Form II and III requisitions, sending prescriptions as soft copies to higher centers. This approach saved a rheumatoid arthritis patient from traveling long distances for medication as shown in figure 05 below.

Figure 5. Utilization of Form II and III at Yebileptsa hospital, Zhemgang.

In Sarpang, patient education on medication adherence and refill processes is emphasized. Health Assistants and GDMOs facilitate refills through phone calls and online portals, collaborating with pharmacies to ensure timely transfers, benefiting patients by reducing travel needs.

4. Responsive referrals.

Mongar uses a mix of on-site and virtual interactions, employing social media platforms (whatsapp groups) to discuss cases and referrals with PHC staff. They inform the receiving personnel about referral details, send patients for consultations, and update patient care after interventions.

In Bumthang, responsive referrals, especially for chronic kidney disease and other NCDs, involve lab checks and arranging specialist appointments(telephonic call) in Thimphu and Gelephu, ensuring efficient coordination for specialized treatment.

In Zhemgang, the NCD clinic's in-charge handles responsive referrals by photographing reports needing follow-up and sharing them in the PEN Hearts group chat, informing the relevant health centers for further referral.

5. Reach-out services

In Mongar, reach-out services are conducted by the NCD focal person or doctor, depending on the patient's needs. They identify priority patients, evaluate their care requirements, and form a visiting team. This team assesses patient needs, communicates with patients and village health workers, prepares necessary equipment, schedules visits, and plans additional interventions.

In Bumthang, the team ensures follow-up care for individuals unable to access health services, currently serving 49 homebound patients from the hospital and 108 from five primary health centers. They deliver medications using personal and government cars, led by the NCD focal person.

In Yebileptsa, health assistants ensure timely delivery of catheters and medications to a bedridden patient. Pharmacists in Zhemgang keep patient medication records and pre-pack medications for distribution.

Sarpang's outreach clinic, led by the HA and GDMO, conducts regular follow-ups for bedridden patients, providing education and awareness about palliative care and available services, including home visits, illness management, and psychosocial support for patients and caregivers.

6. Reliable supply.

The implementation of the SCCI has significantly enhanced the reliability of drug supplies such as losartan, hydrochlorothiazide and metformin at primary health care centers. There is consistent availability of the tools required for the monitoring of diabetes like the glucometers ensuring continuous patient care.

Additionally, the Ministry of Health has committed to maintaining high standards for all the supplied equipment, with uniformity and accuracy in the values they generate. SCCI ensures patient receive consistent care with their dependable supply chain.

7) Real-time mentoring, supportive supervision and peer coaching

In Bumthang, real-time mentoring via Google Sheets tracks NCD follow-ups and healthcare initiatives, ensuring prompt guidance for effective patient care. Supportive supervision includes PHC visits for mentoring the staff, with colleagues from one PHC coaching others to enhance patient care. Over the past two years, Bumthang has conducted 22 peer coaching sessions and 10 for PHCs, funded by the program. Zhemgang conducts annual mentoring and supervision at primary health centers, led by the Medical officer, NCD focal person and district health officer. They've performed 2 peer coaching sessions but haven't extended all the PHCs within the districts due to many challenges. The last supervision was in mid-2023, focusing on sensitizing new staff to SCCI and new tools.

In Mongar, the robust team from the Referral hospital mentors PHCs, visiting annually for supportive supervision using checklists to note achievements and challenges. They've conducted 7 peer coaching sessions and 3 for PHCs, with the latest supervision in May 2024.

Sarpang, led by its focal person have trained 228 health staff. They've conducted a total of 7 peer coaching sessions including 2 for PHCs within two months of SCCI implementation, emphasizing efficient capacity building as shown in figure 06.

Figure 6. Peer coaching session at Bumthang hospital.

ENHANCED OUTCOMES THROUGH SCCI INNOVATIONS

The implementation of SCCI has brought about notable changes in the work culture:

a) Workload: At Bumthang and Zhemgang, since all visitors to health centers were screened for NCDs using the concept of *"Opportunistic screening"*. There was significant reduction the workload on doctors as many old cases and stable NCD patients were managed by NCD unit. In Mongar, digitizing health records minimized paperwork and provided stakeholders with real-time data. Conversely, the workload at PHCs has increased while decreasing at the district hospital in Sarpang.

b) Service quality: SCCI significantly improved primary healthcare delivery in Mongar by fostering a robust team and implementing task sharing among health assistants at PHCs, enhancing service accessibility and efficiency. The district focal person played a crucial role in overseeing SCCI activities, ensuring data accuracy and accessibility.

In Zhemgang and Bumthang, post-SCCI implementation, NCD staff maintained detailed patient files, facilitating efficient management and streamlined pharmacy operations, including prepacking medications and providing door-to-door health assessments. All necessary examinations and lab tests were conducted as per educational programs for health workers and patients, such as fundoscopy for diabetic patients and routine dental checks.

In Sarpang, reduced patient queues have enabled more time and improved services at both the district and regional hospitals.

c) Patient satisfaction and compliance – Although measuring satisfaction levels can be challenging, there was a noticeable improvement in patient compliance with treatment and management as per new treatment protocols. Patients are happier as they can save the waiting time and transportation cost due to easier access to the health care. Furthermore, telephonic fixing of appointment with doctors at higher health centers have further been a noticeable change.

d) Health Systems Impact: Implementing well-planned screening processes through creation of *"NCD triage corner*" concept have facilitated towards the aims to reduce premature deaths and complications from NCDs as shown in figure 07.

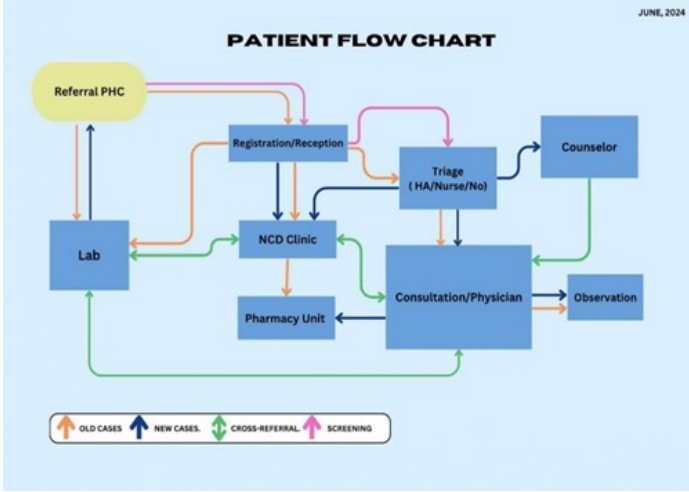

Figure 7: Revised patient work flow chart for smooth NCD patient management in hospitals.

This proactive strategy seeks to lessen the future complexities and complications, benefiting the health system. Protocols for the management of CVD, CRD, Diabetes and hypertension has been produced for the care of patients in the PHC level. These protocols are for delivery of a minimum set of essential interventions addressing the four major NCDs.(10)

e) Data generation: Furthermore, SCCI has enhanced data generation and reporting, utilizing a national dashboard to streamline data recording and reduce duplication, please refer figure 08. Improved patient care and enhanced treatment compliance are expected to further reduce complications, ultimately lowering future treatment costs and burdens.

Figure 8. National NCD dashboard as of August 2024.

CHALLENGES IN SCCI IMPLEMENTATION

a) **Service Delivery Related**: The increase in NCD screenings, especially lab tests, has posed challenges in managing the volume efficiently.

Mongar addressed staff shortages and equipment deficits by investing in essential equipment, ensuring timely drug supply, and conducting extensive training to bridge skill gaps.

Bumthang and Zhemgang struggled to adapt service delivery methods for long-serving staff, facing resistance in learning new techniques and approaches.

Sarpang contends with limited budget for home-based care and human resource constraints at PHCs, increasing workload for Health Assistants (HAs) and General Duty Medical Officers (GDMOs).

b) **Health Systems Related**: Challenges in service provision include limited access to basic equipment like BP apparatus, compounded by insufficient financial support for essential needs such as staff refreshments post-homebound patient care, impacting staff morale. Human resource shortages are a significant hurdle, affecting NCD screening and record-keeping due to inadequate trained personnel.

All four districts encounter similar challenges of frequent turnover among key personnel, mitigated through succession planning, clear SCCI process documentation, and seamless training material transitions during personnel changes

c) **Patient related** – Challenges were faced in the recall and reminder component, when patients had low self-awareness about their condition and those who didn't have care givers at home thus not being able to reach for the routine services. Frequent change in contacts were common problems for all four districts.

d) **Other Significant Challenges**: One significant challenge in success driving this initiative is timely monitoring and evaluation with sustainable financing for SCCI intervention. Also, incentivizing the stakeholders engaged also was perceived as one of the key to successful implementation and mainstreaming of this noble initiative.

CONCLUSIONS

In conclusion, SCCI implementation with framework of 7Rs and 3Cs in the districts of Bumthang, Mongar, Zhemgang, and Sarpang districts of Bhutan has been pivotal role in showcasing role of SCCI in addressing non-communicable diseases in Bhutan. These efforts include promoting healthy lifestyles, early NCD detection through opportunistic screening all people visiting health facilities, use of form III and II to procure medicine from high health centers. Additionally, use of protocol-based management of those affected by NCDs to control and prevent or delay complications due to NCDs.

SCCI has also notably improved data management and healthcare efficiency across these districts. Despite challenges such as staff turnover and resource constraints, Bhutan has made significant strides in NCD management thanks to teamwork and the dedication of healthcare workers.

Acknowledgment

Heartfelt gratitude to WHO for providing with necessary funds to carry out SCCI activities. Without financial support, we would not have been able to make progress we have.

We express our sincere appreciation to the Ministry of Health for their invaluable support and guidance throughout the implementation of the service.

A special thank you to KGUMSB and FNPH for their dedication and commitment to making the SCCI project a remarkable success for the Bhutanese community.

We extend our heartfelt gratitude to everyone involved in compiling data and providing essential details. We would not have been able to complete our work without their assistance.

We also wish to thank all the dedicated health staffs who tirelessly worked to provide care to patients with Non-Communicable Diseases. Their commitment has been the major reason behind successful implementation of SCCI.

Lastly, we express our sincere thanks to patients who diligently followed medical advice and treatment protocols which played a crucial role in achieving positive health outcomes

REFERENCES

World Health Organization. (n.d.). *Noncommunicable diseases*. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

Ministry of Health. (2019). *Non-communicable disease risk factors survey: Bhutan STEPS survey report*. Ministry of Health.

World Health Organization. (2023, March 16). *Hypertension*. https://www.who.int/news-room/fact-sheets/detail/hypertension

Ministry of Health. (2023). *National health survey*. https://drive.google.com/file/d/1ASynBwkGIVhqZVwQGV3Zjxk41Zqp3G8R/view

Anonymous. (2012). Annual health bulletin 2012. *Annual Health Bulletin Sri Lanka, 36*.

World Health Organization. (2013). *Implementation tools: Package of essential noncommunicable disease interventions*. World Health Organization.

World Health Organization. (2018). *Package of essential noncommunicable disease and healthy lifestyle interventions: Training modules for primary health care workers*.

National Statistics Bureau, Royal Government of Bhutan. (2023). *Annual Bumthang Dzongkhag statistics*. https://www.nsb.gov.bt/publications/annual-dzongkhag-statistics/

Ministry of Health, Royal Government of Bhutan. (2023). *Annual health bulletin*. https://www.moh.gov.bt/wp-content/uploads/Annual-Health-Bulletin-2024.pdf

National Statistics Bureau, Royal Government of Bhutan. (2023). *Annual Mongar Dzongkhag statistics*. https://www.nsb.gov.bt/publications/annual-dzongkhag-statistics/

National Statistics Bureau, Royal Government of Bhutan. (2023). *Annual Zhemgang Dzongkhag statistics*. https://www.nsb.gov.bt/publications/annual-dzongkhag-statistics/

National Statistics Bureau, Royal Government of Bhutan. (2023). *Annual Sarpang Dzongkhag statistics*. https://www.nsb.gov.bt/publications/annual-dzongkhag-statistics/

Poudel, Y. K. (2022, September 23). *UN recognises health ministry for its primary health care initiative*. Kuensel. https://kuenselonline.com/un-recognises-health-ministry-for-its-primary-health-care-initiative/

World Health Organization. (2020). *Package of essential noncommunicable disease interventions for primary health care*. https://iris.paho.org/handle/10665.2/52998

Ministry of Health, Royal Government of Bhutan. (2018). *Package of essential NCD (PEN) interventions for hospitals*..