IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Assessment of Targeted Interventions to Enhance Awareness on Non Communicable Diseases :Insights from Rural Communities of SriLanka

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ABSTRACT

A study in the Mahawilachchiya area of Anuradhapura district, Sri Lanka, focused on identifying knowledge gaps, risk factors, and service utilization related to non-communicable diseases (NCDs) in rural populations. Despite limited research on rural areas, this study surveyed 342 individuals using a structured questionnaire. Results showed a high level of awareness and knowledge about NCDs, with most participants accurately identifying major risk factors such as physical inactivity and unhealthy diets. Additionally, respondents demonstrated a good understanding of Healthy Lifestyle Centres (HLC), indicating familiarity with healthcare facilities addressing NCDs. The study highlights the need for targeted interventions to enhance NCD awareness and knowledge in rural Sri Lankan communities, emphasizing improvements in education and the promotion of healthy lifestyles. Sociologically, the findings underscore the importance of addressing social determinants of health, including poverty, limited education, and inadequate healthcare access, which significantly affect rural populations. By focusing on these areas, public health interventions can more effectively reduce the burden of NCDs in rural Sri Lanka. This study emphasizes the critical role of tailored strategies in improving health outcomes and reducing disparities in rural communities. (Key words : Non Communicable Disease, Healthy Life Centers, Awarness, Risk Factors)

Introduction

Noncommunicable diseases (NCDs), or chronic diseases, are long-lasting and result from a combination of genetic, physiological, environmental, and behavioral factors. The primary types of NCDs include cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes. These diseases are responsible for 41 million deaths annually, accounting for 74% of all deaths globally. Low- and middle-income countries bear the brunt, with 77% of NCD deaths and 86% of premature NCD deaths occurring in these regions. NCDs

affect people of all ages and demographics, with 17 million people dying from NCDs before the age of 70 each year. Key modifiable behavioral risk factors include tobacco use, physical inactivity, unhealthy diets, and harmful use of alcohol. Environmental factors, notably air pollution, also significantly contribute to the NCD burden. Metabolic risk factors, such as raised blood pressure, overweight/obesity, hyperglycemia, and hyperlipidemia, heighten the risk of NCDs. Elevated blood pressure is the leading metabolic risk factor, attributing to 19% of global deaths.

NCDs pose a significant threat to poverty reduction and sustainable development, particularly in low-income countries. The high costs associated with NCD treatment and the resulting loss of income drive millions into poverty annually. Controlling NCDs requires reducing associated risk factors through low-cost, government-led interventions and monitoring trends. Comprehensive, multi-sectoral approaches are needed, involving health, finance, education, agriculture, and other sectors. Early detection, screening, treatment, and palliative care are critical components of NCD management.

. Considering the importance of researching the certain factors related to NCDs in Rural community SriLanka where Health resources are relatively poor the study was planned to conduct in Madawatchchiya, small village in Anuradhapura District North Central Province in SriLanka

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Objective

This study aims to assess level of awareness of NCDs/Risk factors ,and Utilization of Health care services (HLC) available for control of NCDs in rural populations in Sri Lanka.

Method

The study setting was Anuradhapura district. This district was selected due to its predominantly rural nature and high prevalence of NCDs. Anuradhapura is the largest district in Sri Lanka, covering an area of approximately 7,128 square kilometers and having a population of over 860,000 people. A multi-stage quota sampling technique, one of the sampling methods in non-probability sampling, was employed to select study participants. In the first stage, Mahawilachchiya divisional secretariat division was selected from the Anuradhapura district, and second stage, four Grama Niladhari Divisions were selected from the DS division. These two selections were made using the quota sampling technique. Then, households were selected from each selected Grama Niladhari Division using a convenience sampling method.Based on the sample calculation, a possible sample size for a survey in a population of 2318 was approximately 384. A structured questionnaire was used to collect data from study participants.

Results

The study population consisted of 342 individuals from rural communities in the Mahawilachchiya area of the Anuradhapura district in Sri Lanka.

Table 1 : Socio-Demographic information of Respondents

Description	Value	N	Percent
Age	20-30	45	13.2%
	31-40	82	24.0%
	41-50	87	25.4%
	51-60	60	17.5%
	61-70	50	14.6%
	Above 71	18	5.3%
Gender	Female	194	56.7%
	Male	148	43.3%
Race	Sinhala	339	99.1%
	Tamil	3	0.9%
	Muslim	0	0.0%
	Other	0	0.0%
Religion	Buddhist	339	99.1%
	Catholic	1	0.3%
	Hindu	2	0.6%
	Islam	0	0.0%
Education Level	Never attended	24	7.0%
	Grade 1 to 5	60	17.5%
	6 to G C E O/L	139	40.6%
	Passed G C E O/L	51	14.9%
	Up to G C E A/L	17	5.0%
	Passed G C E A/L	18	5.3%
	Diploma	0	0.0%
	Graduate	2	0.6%
	Other	31	9.1%
Civil Status	Married	313	91.5%
	Single	2	0.6%
	Living Separately	7	2.0%
	Living together	4	1.2%
	Divorced	1	0.3%
	Widow	15	4.4%

Source: Created by authors based on analyzed data

Table2 : Types of Other Income

Type of Other Income	N	Percent
Farming	70	38.9%
Three wheel Driver	3	1.7%
Masonry Work	25	13.9%
Trade	13	7.2%
Government Welfare	9	5.0%
Private Business	6	3.3%
Self Occupation	6	3.3%
Cow Management	8	4.4%
Garment	2	1.1%
Abroad	2	1.1%
Other	18	10.0%
Total	**180**	**100.0%**

Source: Created by authors based on analyzed data

Table3: Monthly Income Distribution

Income Range	N	Percent
Rs. Less than 10,000	23	6.7
Rs. Between 10 001 - 20 000	56	16.4
Rs. Between 20 001 - 30 000	73	21.3
Rs. Between 30 001 - 40 000	65	19.0
Rs. Between 40 001 - 50 000	42	12.3
More than 50 001	80	23.4
Total	339	99.1
No Respond	3	.9
Total	**342**	**100.0**

Source: Created by authors based on analyzed data

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General Awareness Level of NCD

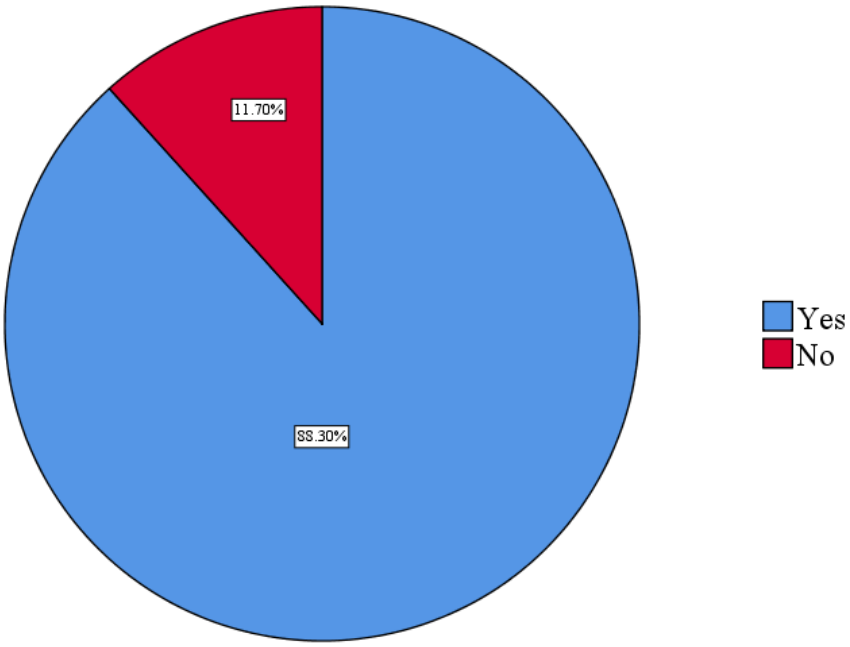


Figure1: Awareness of Non-Communicable Diseases

Source: Created by authors based on analyzed data

This data suggests a significant level of awareness among the surveyed population regarding non-communicable diseases. It is encouraging to see that a large proportion of respondents have knowledge about NCDs, which are chronic health conditions that are often preventable and manageable through lifestyle modifications and appropriate healthcare interventions. The high percentage of respondents aware of NCDs indicates that there is a reasonable level of understanding and information dissemination regarding these diseases within the surveyed community. This awareness can serve as a foundation for promoting health literacy and implementing effective prevention and control strategies to mitigate the burden of NCDs.

Sources of Awareness about Non-communicable Diseases

Table4 : Sources of Awareness about NCD

Source of Awareness	N	Percent
Mid Wife	42	11.4%
Government Hospital	116	31.5%
School	20	5.4%
Media	87	23.6%
Society	60	16.3%
Relatives	16	4.3%
DS Office	1	0.3%
Government	13	3.5%
NGO	1	0.3%
PHI	3	0.8%
Other	9	2.4%
Total	**368**	**100.0%**

Source: Created by authors based on analyzed data

Respondents' Knowledge of Types of Non-Communicable Diseases

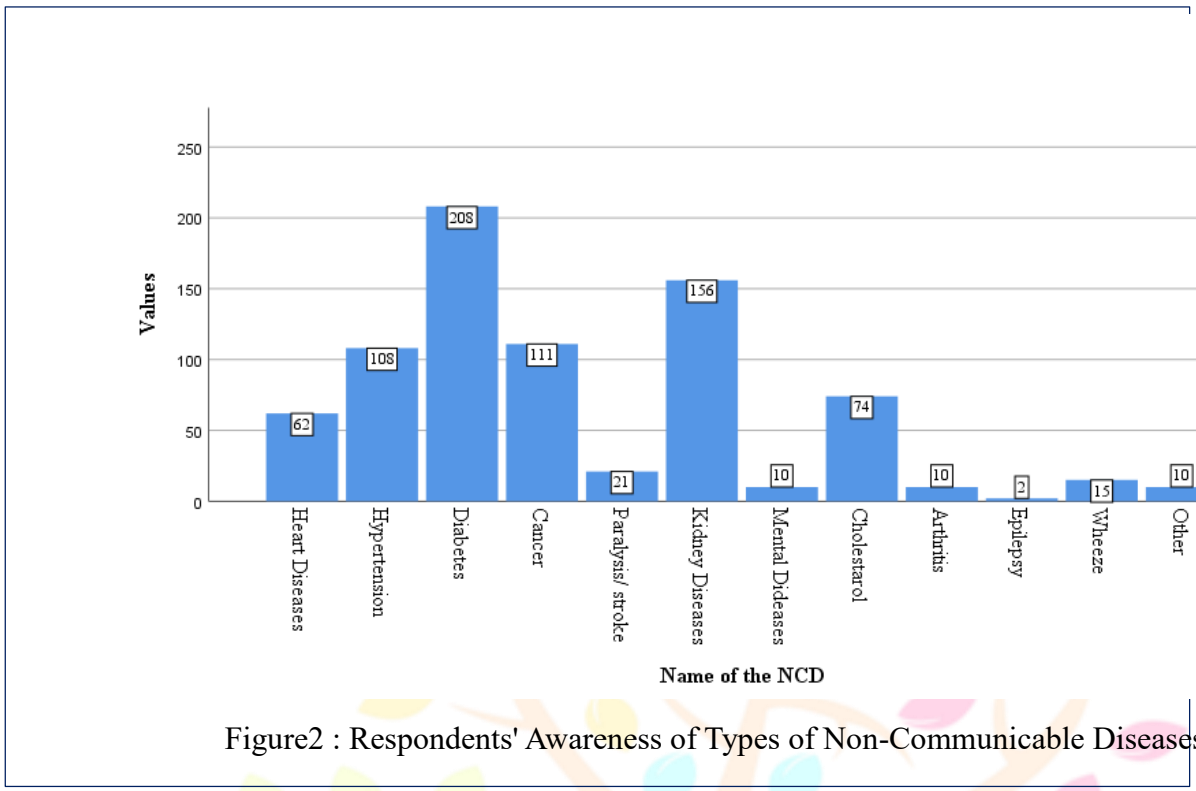


Figure2 : Respondents' Awareness of Types of Non-Communicable Diseases

Source: Created by authors based on analyzed data

Awareness of Factors Contributing to the Increase in NCDs

Table 5 : Awareness of Risk Factors

Description	N	Percent
Yes	278	81.3
No	59	17.3
No Response	5	1.5
Total	**342**	**100.0**

Source: Created by authors based on analyzed data

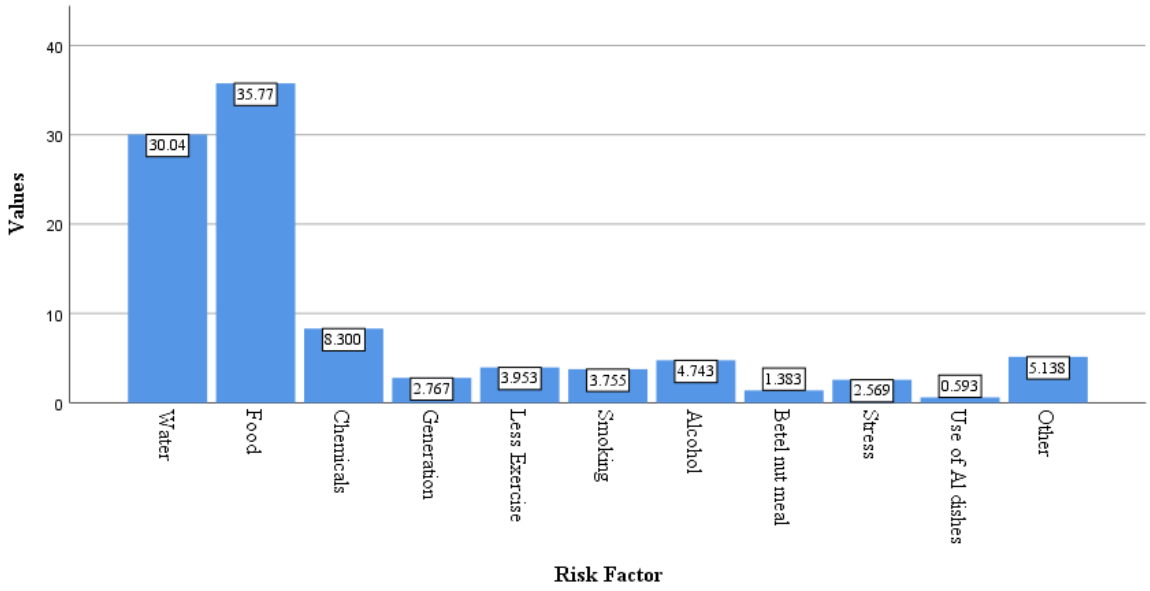


Figure 3 Awareness of Risk Factors Contributing to Non-Communicable Diseases

Source: Created by authors based on analyzed data

Preferred Institution for NCD Detection and Prevention Services

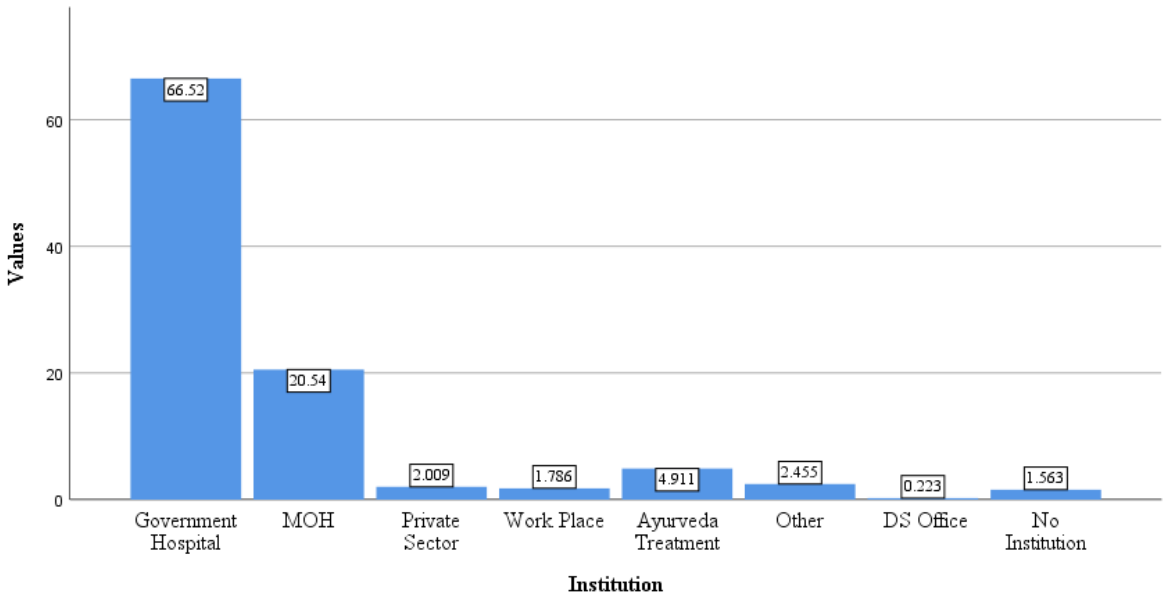


Figure4 : Preferred Institution for NCD Detection and Prevention Services

Source: Created by authors based on analyzed data

Awareness of NCD by Age of Respondents

Table 6 : Awareness of NCD by age of the Respondent

Description		Does the respondent aware of NCD		Total
		Yes	No	
Age of the Respondent	20-30	39	6	45
	31-40	74	8	82
	41-50	80	7	87
	51-60	51	9	60
	61-70	44	6	50
	Above 71	14	4	18
Total		**302**	**40**	**342**

Source: Created by authors based on analyzed data

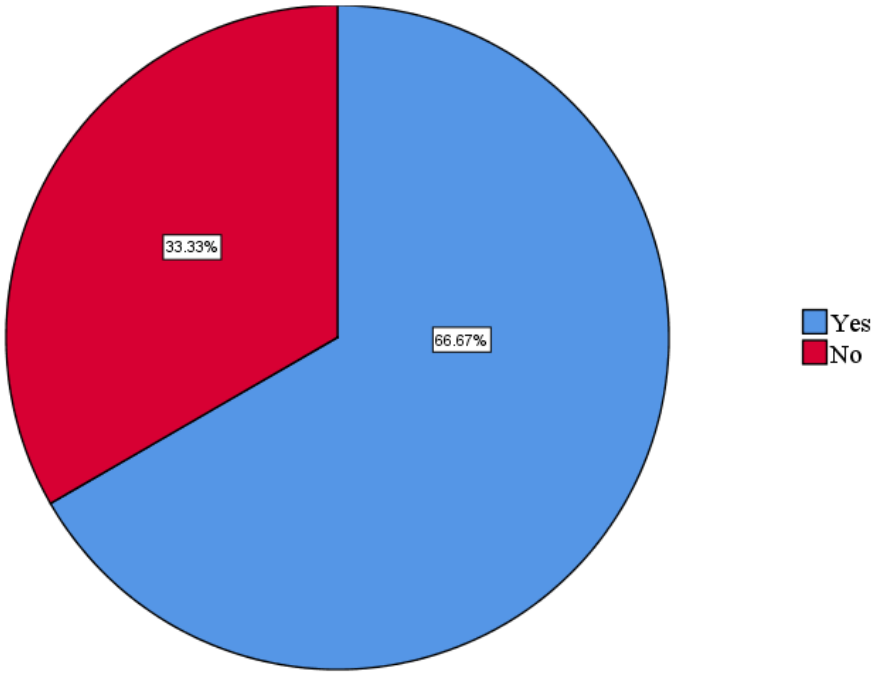
Awareness of NCD by Educational Level of Respondents

Table 7 : Awareness of NCD by Educational Level of Respondents

Description		Does the respondent aware of NCD		Total
		Yes	No	
Education Level of the Respondent	Never attended	21	3	24
	Grades 1 to 5	51	9	60
	6 to G C E O/L	123	16	139
	Passed G C E O/L	46	5	51
	UP to G C E A/L	17	0	17
	Passed G C E A/L	16	2	18
	Graduate	2	0	2
	Other	26	5	31
Total		**302**	**40**	**342**

Source: Created by authors based on analyzed data

Figure5 : Awareness of HLC



Source: Created by authors based on analyzed data

Source of Information on Healthy Lifestyle Centers

Figure6 : Source of Information on Healthy Lifestyle Centers

Source: Created by authors based on analyzed data

Attendance and Engagement at HLCs: Exploring Personal Experience

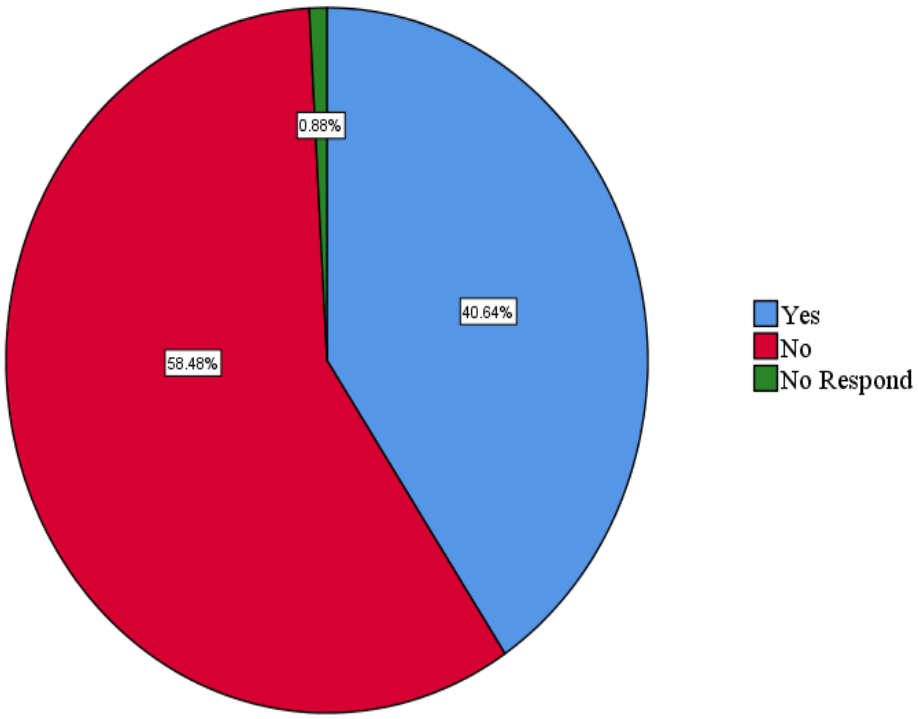


Figure7 : Participation of HLCs

Source: Created by authors based on analyzed data

Table8 : Satisfaction about HLCs

Statement	N	Minimum	Maximum	Mean	Std. Dev.
If you have attended wellness clinics, your satisfaction with that service (1= Satisfied, 2= Neutral, 3= Unsatisfied)	134	1	3	1.14	.427
Valid N	**134**				

Source: Created by authors based on analyzed data

Table 9: Reasons for High Satisfaction with HLCs

Reason	N	Percent
Giving Medicines	62	42.8%
Referral to other Specialty Clinics	17	11.7%
Free Delivery	35	24.1%
Proper Order	23	15.9%
Friendliness	8	5.5%
Total	**145**	**100.0%**

Source: Created by authors based on analyzed data

Table10 : Reasons for Not Being Happy with HLCs

Reason	N	Percent
Doctors not examining the patient properly	2	.6
Waste of time	2	.6
Total	4	1.2
No Respond	338	98.8
Total	**342**	**100.0**

Source: Created by authors based on analyzed data

feedback from individuals who are not happy with their services, as understanding and addressing their concerns can help improve overall satisfaction levels and service quality.

Services Offered by Healthy Lifestyle Centers: A Comprehensive Overview

Table11: Services offered by HLCs

Service	N	Percent
Eye Examination	45	15.9%
Blood Test	84	29.7%
Blood Pressure	43	15.2%
BMI	14	4.9%
Urine Test	26	9.2%
Administration of Medicines	20	7.1%
Counseling and Awareness	25	8.8%
Suvanari Clinic	7	2.5%
Kidney Test	19	6.7%
Total	**283**	**100.0%**

Source: Created by authors based on analyzed data

Reasons for Not Attending Healthy Lifestyle Centers: Non-Attendance Factors

Table12: Reasons for Not Attending Healthy Lifestyle Centers

Reason	N	Percent
Fear of getting Infectious Diseases	171	61.7%
Lack of Awareness about HLCs	34	12.3%
No Interest in Non-Communicable Diseases	13	4.7%
Health Status Checked elsewhere for NCD	17	6.1%
No Time to attend HLC	8	2.9%
Fear of being diagnosed with NCDs	3	1.1%
No Encouragement	1	0.4%
Transportation Difficulties	13	4.7%
Excessive Transportation Charges	7	2.5%
Irregularity in Those Places	4	1.4%
Other	6	2.2%
Total	**277**	**100.0%**

Source: Created by authors based on analyzed data

Suitable Locations for Setting Up Healthy Lifestyle Centers

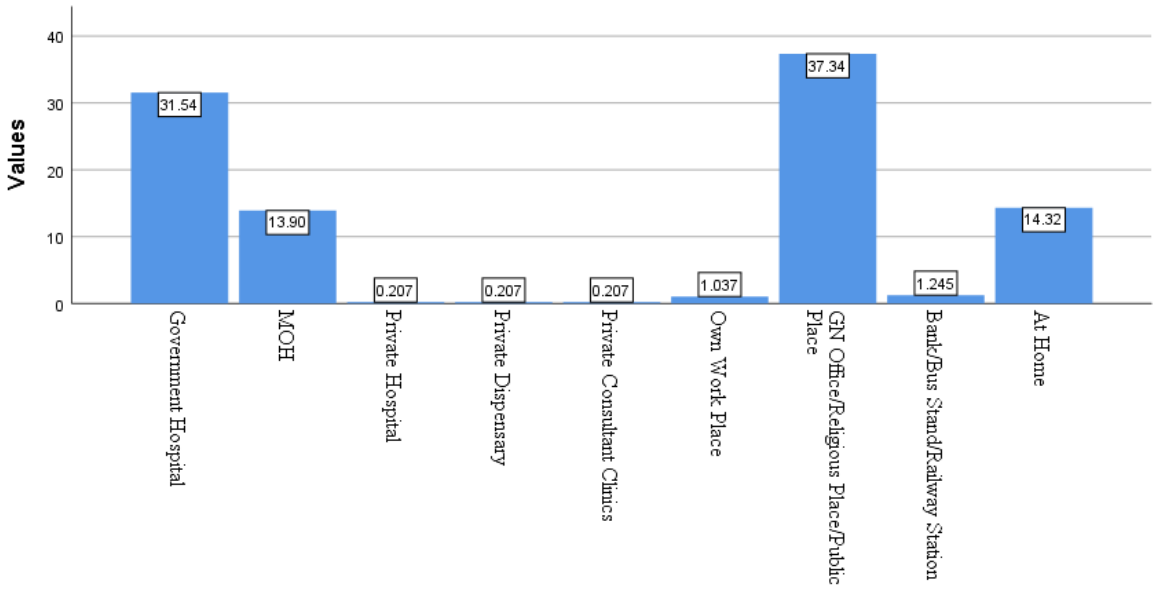


Figure 8 Suitable Location for Setting UP HLCs

Source: Created by authors based on analyzed data

The analysis suggests that the GN office/religious place/public place is the most commonly recommended location for setting up HLCs, followed by government hospitals. These findings can provide valuable insights for decision-makers and stakeholders in selecting appropriate locations that align with the preferences and needs of the community for establishing effective Healthy Lifestyle Centers.

Suggestions to Increase Participation in Healthy Lifestyle Centers

Table 13 Suggestions to Increase Participation in HLCs

Suggestion	N	Percent
Increase in Transport Facilities	45	11.5%
Increasing Medical Research Activities	25	6.4%
Raising Awareness	164	42.1%
Increase of Adequate Health Staff	17	4.4%
Conducting Clinics at the Village Level	78	20.0%
Increasing Friendliness and Efficiency	16	4.1%
No Specific Idea	45	11.5%
Total	**390**	**100.0%**

Source: Created by authors based on analyzed data

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The analysis indicates that raising awareness and conducting clinics at the village level are prominent suggestions for improving HLCs. Additionally, addressing transportation challenges, increasing medical research activities, enhancing health staff availability, and improving friendliness and efficiency within HLCs are also important considerations. These findings can inform policymakers, healthcare administrators, and stakeholders in implementing strategies to enhance the effectiveness and accessibility of Healthy Lifestyle Centers.

Prevalence of Non-Communicable Diseases in the Data Contributor and Spouse

Table14: Prevalence of NCD in the Data Contributor and Spouse

Status	N	Percent
Yes	134	39.2
No	208	60.8
Total	**342**	**100.0**

Source: Created by authors based on analyzed data

Table15: Prevalence of Non-communicable Diseases among Respondents

Type of Disease	N	Percent
Heart disease	16	13.7%
Hypertension (High Blood Pressure)	43	36.8%
Diabetes	17	14.5%
Cancer	3	2.6%
Paralysis (stroke)	6	5.1%
Kidney disease	8	6.8%
Mental illness	1	0.9%
Asthma	11	9.4%
Cholesterol	7	6.0%
Other Illnesses	5	4.3%
Total	**117**	**100.0%**

Source: Created by authors based on analyzed data

Table 16 Prevalence of Non-communicable Diseases among Spouses

Type of Disease	N	Percent
Heart Disease	15	16.5%
Hypertension (High Blood Pressure)	23	25.3%
Diabetes	17	18.7%
Cancer	5	5.5%
Paralysis (Stroke)	2	2.2%
Kidney Disease	10	11.0%
Asthma	6	6.6%
Cholesterol	4	4.4%
Epilepsy	2	2.2%
Other Illnesses	7	7.7%
Total	**91**	**100.0%**

Source: Created by authors based on analyzed data

Prevalence of NCD in Parents and Spouse's Parents

Table17 : Prevalence of NCD in Parents

Disease	N	Percent
Heart disease	64	16%
High blood pressure (hypertension)	103	26%
Diabetes	71	18%
Cancer	29	7%
Stroke/paralysis	13	3%
Kidney disease	52	13%
Mental illness	4	1%
No illness	50	12%
Cholesterol	7	2%
Other illnesses (specific diseases not provided)	10	2%
Total	**403**	**100%**

Source: Created by authors based on analyzed data

Receiving Treatment for Non-Communicable Diseases

Table18 : Medication status of Respondent

Description	Medication Status		Total
	Yes	No	
Respondents with NCD	78	17	95

Source: Created by authors based on analyzed data

Diagnosis Location of Non-Communicable Diseases among Respondents

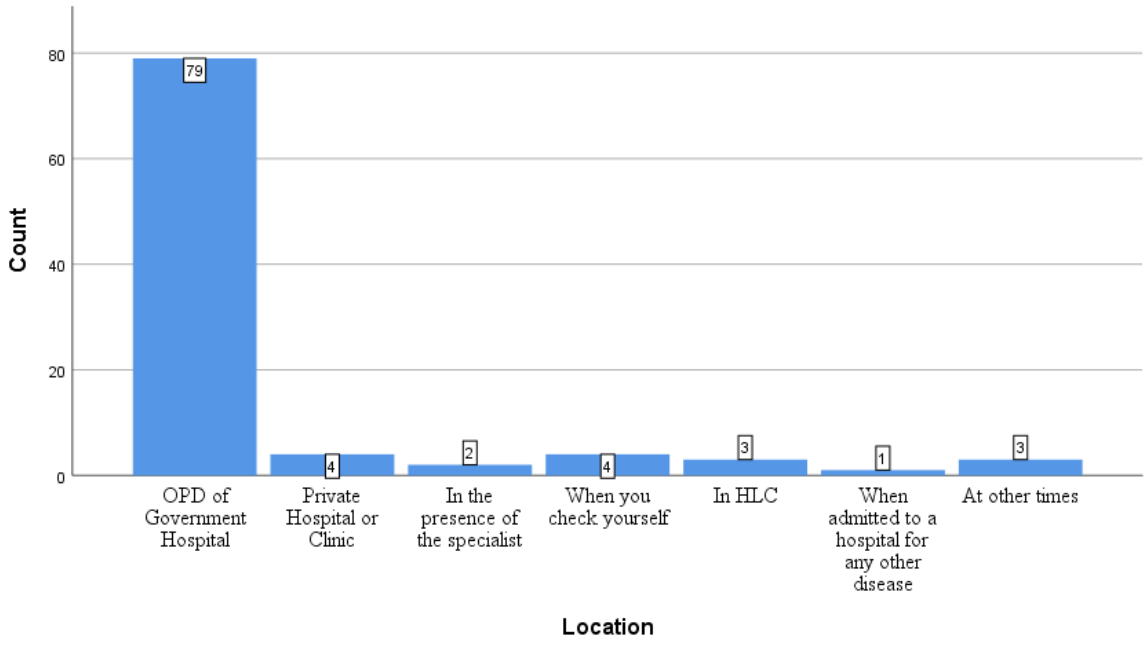

Figure9: Diagnosis Location of NCD among Respondents

Source: Created by authors based on analyzed data

Source of Medication for Non-communicable Diseases

Table19: Source of Medication for Non-communicable Diseases

Source	N	Percent
Government Hospital	87	80.6%
Private Dispensary	4	3.7%
Private Pharmacy	14	13.0%
Local Ayurveda	3	2.8%
Total	**108**	**100.0%**

Source: Created by authors based on analyzed data

Discussion

Awareness of Non-Communicable Diseases

The majority of respondents (88.3%) indicated awareness of non-communicable diseases (NCDs), suggesting a significant level of awareness in the surveyed population. However, 11.7% reported being unaware of NCDs, indicating the need for targeted educational initiatives. Government hospitals (31.5%) and media (23.6%) were the main sources of awareness about NCDs. Society/relatives (16.3%) and schools (5.4%) also contributed to awareness. Diabetes (26.3%) and hypertension (13.7%) were the most recognized NCDs. A significant proportion of respondents (81.3%) were aware of risk factors contributing to NCDs, with food (35.8%) and water consumption (30.0%) being the most recognized. The majority of respondents agreed that NCDs can be prevented by reducing risk factors and expressed concern about increasing NCDs in Sri Lanka. Government hospitals (66.5%) were preferred for NCD services. There was no substantial correlation between age and NCD awareness, but higher educational levels were associated with higher awareness.

Awareness of Healthy Lifestyle Centers

The survey results show that 66.7% of respondents are aware of Healthy Lifestyle Centers (HLCs), indicating a significant level of awareness. Efforts should be made to increase awareness among the general population through targeted educational campaigns and collaborations with healthcare providers, community organizations, and educational institutions. Government hospitals play a significant role as a source of information about HLCs. Midwives, friends/relatives/neighbors, and television also contribute to raising awareness. Attendee rates at HLCs are 40.6%, suggesting room for improvement. The satisfaction level of attendees is generally positive, with factors such as conducting research, providing medications, facilitating referrals, offering free delivery services, and maintaining proper order and friendliness contributing to high satisfaction. Reasons for non-attendance include the absence of infectious diseases, lack of awareness about NCD clinics, and a lack of interest in non-communicable diseases. HLCs offer a comprehensive range of services, including eye examinations, blood tests, blood pressure monitoring, BMI measurements, urine tests, medication administration, counseling and awareness programs, specialized clinics, and kidney tests. Efforts should be made to address barriers and increase attendance at HLCs to promote healthier lifestyles

Prevalence of Non-Communicable Diseases

The findings from the survey indicate that a significant portion of the surveyed population is affected by NCDs, with 39.2% of respondents reporting suffering from such diseases. Hypertension was found to be the most prevalent condition, affecting 36.8% of respondents, followed by diabetes (14.5%) and heart disease (13.7%). These findings highlight the need for effective preventive measures, early detection, and appropriate management strategies for these prevalent health conditions. The survey also identified less prevalent conditions such as asthma, kidney disease, paralysis/stroke, cancer, and mental illness, underscoring the varied spectrum of health concerns within the population. Among the spouses of respondents, hypertension, diabetes, and heart disease were the most prevalent NCDs. These findings emphasize the importance of regular monitoring, lifestyle modifications, and access to medical care for both the respondents and their partners. The prevalence of kidney disease and asthma among spouses further highlights the need for comprehensive healthcare services that address these specific conditions. The presence of other reported NCDs among spouses suggests the existence of additional health conditions that may require attention and specialized care.

The analysis of NCDs among the parents and spouse's parents revealed varying prevalence rates for different conditions. Heart disease, hypertension, and diabetes were found to have higher prevalence rates, while cancer, stroke/paralysis, and mental illness had relatively lower rates. These findings provide insights into the burden of NCDs within the immediate family and indicate the need for targeted interventions and healthcare services.

Regarding medication status, a high percentage (82.1%) of respondents with NCDs reported receiving medication for their conditions. This suggests that a significant proportion of individuals are actively seeking treatment and managing their NCDs through medication. However, further research is needed to explore the factors influencing medication adherence and identify barriers that may hinder optimal disease management. The analysis of diagnosis locations revealed that the Outpatient Department of Government Hospitals played a prominent role in diagnosing NCDs within the surveyed population. This suggests the importance of public healthcare facilities in addressing NCDs. Private hospitals/clinics, specialist consultations, self-checking, non-communicable disease clinics, and hospital admissions for other diseases were also reported as sources of diagnosis. These findings highlight the diverse means and settings through which NCDs are diagnosed, emphasizing the importance of specialized medical expertise and comprehensive healthcare services. Regarding the sources of medication, the majority of individuals obtained their medication from government hospitals, reflecting a significant reliance on public healthcare facilities. This preference may be influenced by factors such as accessibility, affordability, and availability of specialized services for managing NCDs.

However, a small proportion of individuals reported obtaining medication from private dispensaries, pharmacies, and local Ayurveda. These findings indicate diverse healthcare-seeking behaviors and preferences within the population.

In conclusion, the survey data analysis has provided valuable insights into the prevalence of NCDs, healthcare utilization for diagnosis and treatment, and patterns of medication sources among the surveyed population. These findings contribute to healthcare planning, resource allocation, and the development of targeted interventions for addressing the burden of NCDs. The data underscores the importance of preventive measures, early detection, and effective management strategies for prevalent NCDs such as hypertension, diabetes, and heart disease. It also highlights the need for comprehensive healthcare services that address conditions like kidney disease, asthma, and cancer

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Conclusion

The findings from this research shed light on the awareness, prevalence, and management of non-communicable diseases (NCDs) among rural populations in Sri Lanka. While a significant level of awareness about NCDs was observed, there remains a need for targeted educational initiatives to address the knowledge gaps among the 11.7% of respondents who reported being unaware of NCDs. Efforts should be made to enhance existing awareness institutions, such as Healthy Lifestyle Centers (HLCs), and increase collaboration with government hospitals, media, and educational institutions to disseminate information about NCDs and healthy lifestyles.

The prevalence of NCDs among the surveyed population, with conditions such as hypertension, diabetes, and heart disease being the most prevalent, highlights the urgent need for preventive measures, early detection, and appropriate management strategies. The burden of NCDs extends beyond the respondents themselves, affecting their spouses, parents, and spouse's parents. These findings emphasize the importance of comprehensive healthcare services that address a range of NCDs, including conditions such as asthma, kidney disease, cancer, and mental illness. The survey also revealed that a significant proportion of individuals are actively seeking treatment for their NCDs and managing their conditions through medication. However, further research is needed to understand the factors influencing medication adherence and to identify barriers that may hinder optimal disease management.

Recomendations

Based on the research findings, suggestions can be made to enhance NCD prevention and management within rural Sri Lanka.

- Targeted Educational Campaigns: Develop and implement educational campaigns that specifically target the 11.7% of respondents who reported being unaware of NCDs. These campaigns should leverage various channels, including government hospitals, media, and educational institutions, to raise awareness about NCDs, their risk factors, and the importance of healthy lifestyles.

- Strengthen Healthy Lifestyle Centers: Enhance the capacity and reach of Health Lifestyle Centers (HLCs) in rural areas by providing additional resources, training for healthcare providers, and collaborative partnerships with community organizations. HLCs should offer comprehensive services, including regular screenings, counseling, and awareness programs, to promote healthier lifestyles and early detection of NCDs.

- Improve Access to Healthcare Services: Address the barriers to attending NCD clinics in rural areas by improving access to healthcare services. This can be achieved by increasing the number of healthcare facilities or changing the working hours of HLCs , particularly in underserved regions, and promoting the use of telemedicine and mobile healthcare services to reach remote populations.

- Promote Lifestyle Modifications: Develop targeted interventions and public health campaigns that promote healthy lifestyle modifications, including proper nutrition, regular physical activity, and stress management. These initiatives should consider the socio-economic factors and cultural practices prevalent in rural communities to ensure their effectiveness and sustainability.

- Foster Collaboration and Partnerships: Facilitate collaborations and partnerships among government agencies, healthcare providers, community organizations, and educational institutions to collectively address the challenges posed by NCDs. These collaborations can leverage resources, expertise, and community networks to implement comprehensive interventions and support sustainable changes in behaviour and healthcare-seeking patterns.

These targeted interventions and public health campaigns will bridge knowledge gaps, enhance awareness , and improve the overall well-being of rural populations in relation to NCDs. The ultimate goal is to reduce the burden of NCDs, promote healthier lifestyles, and ensure that individuals in rural Sri Lanka have equitable access to quality healthcare services for the prevention and management of NCDs.

Ethical Approval – Obtained from the University of SriJayawardenapura SriLanka

Financial Support-Self funded

Conflict of Interest-Nothing to declare

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