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Myanmar Retrospective Phase Report

"Knowledge and perception of community on health-related activities of Inclusive Self-Help Groups in three regions of Myanmar"

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Summary

Non-communicable diseases (NCDs), such as heart disease, stroke, cancer, chronic respiratory diseases, and diabetes, are the leading cause of global mortality. Around 40 million of the 56 million global deaths in 2015 were due to NCDs. NCDs are an under-appreciated cause of poverty and hinder the economic development of several countries. Modifiable risk factors that include tobacco, harmful use of alcohol, unhealthy diet, insufficient physical activity, overweight/obesity, raised blood pressure, raised blood sugar and raised cholesterol underlie the major NCDs.

Based on WHO (2018) data NCDs accounted for around 59 percent of total deaths in Myanmar in 2014, which increased to an alarming 68 percent in 2018. Diabetes accounted for 3 percent of deaths in Myanmar in 2014, which increased to 4 percent in 2018.

The present project title "Scaling-Up NCD Interventions in South-East Asia (SUNI-SEA)" is a research consortium project delivered through a collaboration of nine consortium members. The project aims to strengthen the provision of diabetes and hypertension prevention, and management services through evidence-based research in Indonesia, Myanmar and Vietnam, by better understanding effective scaling up strategies for existing NCD interventions. The project will look at both community-based activities and primary health care services as well as the synergies between these for health impact.

The study used explanatory mixed methods using a quantitative survey followed by a qualitative study. The study was carried out in Yangon, Mandalay and Ayeyarwaddy region during January 2020. A total of 75 ISHGs currently exist in these three regions. A total of 660 participants aged 40 years and above participated in the quantitative study from both rural and urban areas, ISHG and non-ISHG villages. For the qualitative component, a total of twelve Focus-Group Discussions (FGDs) were conducted. From each region, two townships were selected, from which two villages: one with ISHG activities and another with no ISHG.

The mean age of the respondents was 57.5 years with male respondents (59.9 years) having a higher mean age than females (56.6 years). More than three-fifth of respondents (61.5 percent) were living in rural areas.

Male respondent had higher education levels than females. Less than one-fifth (18.4 percent) of males and 27.4 percent of females had no formal schooling. Over four-fifths of males and two-thirds of females were currently married. Slightly less than two-third of males were employed/self-employed while the corresponding percentage among females was 45.9 percent.

One-fourth of the total respondents were currently smoking tobacco products with male respondents almost two and a half times more likely to be currently smoking than females. Almost 90 percent of current male smokers, and 86.3 percent of current female smokers were daily smokers. The mean age of initiating smoking among males (20.2 years) was five years less than females mean age.

Overall, one-twelfth of respondents reported ever consuming alcohol, with 26.3 percent among males and 1.0 percent among females.

In terms of active lifestyle, up to one fifth of respondents (20.9 percent) were not following WHO recommendations for sufficient physical exercise (less than 150 minutes of moderate activity per week), and a similar number (21.5 percent) reported for no exercise at all.

The study found that the prevalence of hypertension and diabetes was 77.3 and 16.8 percent respectively. Persons living with such diseases reported low levels of good health. Out of the persons with diabetes and hypertension only 14.7 and 23.3 percent, respectively, reported general good health.

In terms of history of disease, only 57.4 percent of total respondents had ever been tested for diabetes and 91.8 percent were measured for hypertension. Out of those who had been prescribed treatment for hypertension, only 59.1 percent were currently taking prescribed medicines.

Respondents also lacked knowledge on NCDs and their risk factors. Only 53.5 percent of respondents had good knowledge of risk factors for hypertension, and similarly, around half (48 percent) of respondents had good knowledge for diabetes risk factors.

Finally, in the ISHG areas, most respondents (77.9 percent) were aware of ISHGs, or had heard about their existence. However less than one third (30.0 percent) were aware of the services provided by these community groups.

This study found high prevalence of diabetes and hypertension in the community, accompanied by high response rates for risk factors such as insufficient physical exercise and intake of fruit and vegetables, and tobacco consumption. Such findings indicate that there is a need for community-based activities to raise awareness on importance of healthy lifestyles. There is need for developing individual exercise and dietary plans for persons based on their age, physical condition, BMI and disease history through community-based groups such as ISHGs. The awareness of ISHGs and their services was lacking and there is urgent need to raise community awareness and promote services provided by ISHGs for full and effective use of these.

The knowledge on risk factors, symptoms, and complications of diabetes and hypertension was low. Developing training modules for community health volunteers on NCDs and ways to communicate and connect with their communities, is needed in order to transmit simple, accessible, and reliable health education messages at the community level.

Lastly, the study found that respondents health seeking behaviour were not optimal, in terms of screening coverage, and following treatment regimens. This indicates the need to incorporate basic screening for common NCDs at the grass root level as part of the primary health care system, enabling early diagnosis, treatment, and prevention of complications.

Lastly, for reducing the burden of NCDs – from prevention to early diagnosis, and management –synergies between community and Primary Health Care (PHC) levels need to be promoted for conducting health related activities effectively in community groups and further linking them to available services at the PHC level.

Fact Sheet

	Male	Female	Total
Sample size (n)	**179**	**481**	**660**
Background Information			
Mean age of the respondent (years)	59.9 *(58.4- 61.6)*	56.6 (55.7-57.3)	57.5 (56.7-58.3)
Percentage of respondents with no formal schooling	18.4 (13.0-24.9)	27.4 (23.5-31.7)	25.0 (21.7-28.5)
Percentage of currently married respondents	84.9 (78.8-89.8)	66.1 (61.7-70.3)	71.2 (67.6-74.6)
Percentage of currently employed, self-employed respondents	64.8 (57.3-71.8)	46.0 (41.4-50.5)	51.1 (47.2-54.9)
Tobacco smoking			
Percentage of respondents who currently smoke any tobacco products	37.4 (30.3-45.0)	15.2 (12.1-18.7	21.2 (18.2-24.5)
Percentage of current smokers who daily smoke tobacco	89.6 (79.7-95.7)	86.3 (76.2-93.2)	87.9 (81.3-92.8)
Mean age at which daily smokers started smoking (in years)	20.2 (17.9-22.6)	25.2 (22.4-28.0)	22.8 (20.9-24.7)
Percentage of smokers who currently smoke manufactured cigarettes	13.4 (6.3-24.0)	2.7 (0.3-9.5)	7.9 (4.0-13.6)
Percentage of respondents currently using smokeless tobacco products	50.8 (43.3-58.4)	34.5 (30.3-38.9)	38.9 (35.2-42.8)
Alcohol consumption			
Percentage of respondents ever consumed alcohol	26.3 (20.0-33.3)	1.0 (0.3-2.4)	7.9 (5.9-10.2)
Percentage of respondents that had ever consumed alcohol and consumed alcohol in the past 12 months	87.2 (74.3-95.2)	100.0	88.5 (76.6-95.6)
Percentage of respondents that had ever consumed alcohol and consumed alcohol the past 30 days	83.0 (69.2-92.4)	40.0 (5.3-85.3)	78.8 (65.3-88.9)
Active lifestyle			
Percentage of respondents that reported no physical activity	19.6 (14.0-26.1)	22.3 (18.6-26.2)	21.5 (18.4-24.8)
Percentage of respondents that reported insufficient physical activity	16.8 (11.6-23.1)	22.4 (18.8-26.4)	20.9 (17.9-24.2)
Healthy Eating			
Percentage of respondents that reported inadequate diet	84.4 (78.2-89.3)	84.4 (80.9-87.5)	84.4 (81.4- 87.1)
Hypertension			
Percentage of respondents having good knowledge of risk factors	48.6 (41.1-56.2)	55.3 (50.7-59.8)	53.5 (49.6-57.3)
Percentage of respondents having good knowledge of symptoms	42.5 (35.1-50.1)	50.3 (45.7-54.9)	48.2 (44.3-52.1)
Percentage of respondents having good knowledge of complications	79.9 (73.3-85.5)	78.4 (74.4-82.0)	78.8 (75.5-81.8)
Prevalence of hypertension among respondents (%)	77.0 (70.1-82.9)	77.4 (73.3-81.0)	77.3 (73.8-80.4)
Percentage of persons with raised blood pressure reported good general health	28.5 (21.1-36.8)	21.4 (17.3-26.0)	23.3 (19.7-27.3)
Percentage of persons with raised blood pressure reported no limitations in doing usual activities during past 30 days	86.1 (79.2-91.4)	80.2 (75.8-84.2)	81.8 (78.2-85.1)

Indicator	Male	Female	Total
Hypertension treatment seeking behaviour			
Percentage of respondents reported having blood pressure (ever) measured	86.6 (80.7-91.2)	93.8 (91.2-95.8)	91.8 (89.5-93.8)
Percentage of respondents ever diagnosed with raised blood pressure	38.6 (31.4-46.1)	47.2 (42. -51.8)	44.9 (41.0-48.7)
Percentage of respondents diagnosed with hypertension prescribed medicine	88.4 (78.4-94.9)	90.8 (86.2-94.2)	90.2 (86.2-93.3)
Percentage of respondents diagnosed with hypertension, taking medicine regularly	55.1 (42.6-67.1)	60.4 (53.7-66.8)	59.1 (53.3-64.8)
Diabetes Mellitus			
Percentage of respondents having good knowledge of risk factors	49.7 (42.2-57.3)	47.4 (42.9-52.0)	48.0 (44.2-51.9)
Percentage of respondents having good knowledge of symptoms	51.4 (43.8-58.9)	61.7 (57.2-66.1)	58.9 (55.1-62.7)
Percentage of respondents having good knowledge of complications	40.8 (33.5-48.4)	34.5 (30.3-38.9)	36.2 (32.5-40.0)
Prevalence of respondents with diabetes (%)	8.5 (4.8-13.7)	19.9 (16.4-23.8)	16.8 14.0-19.9)
Percentage of persons with diabetes reported good general health	20.0 (4.3-48.1)	13.8 (7.6-22.5)	14.7 (8.6-22.7)
Percentage of persons with diabetes reported no limitations in doing usual activities during past 30 days	86.7 (59.5-98.3)	74.5 (64.4-82.9)	76.2 (67.0-83.8)
Diabetes Treatment seeking behaviour			
Percentage of respondents being ever tested for blood sugar	44.1 (36.7-51.7)	62.4 (57.9-66.7)	57.4 (53.6-61.2)
Percentage of respondents ever diagnosed with raised blood sugar	7.8 (4.3-12.8)	17.3 (14.0-20.9)	14.7 (12.1-17.6)
Percentage of respondents diagnosed with diabetes that were prescribed diabetic medicine	92.9 (66.1-99.8)	96.4 (89.8-99.2)	95.9 (89.8-98.9)
Percentage of respondents diagnosed with diabetes, taking diabetic medicines regularly	78.6 (49.2-95.3)	81.9 (72.0-89.5)	81.4 (72.3-88.6)
Inclusive Self-Help Groups (ISHGs)			
Percentage of respondents that had ever heard of ISHGs	80.2 (71.1-87.5)	76.9 (70.8-82.2)	77.9 (73.0-82.2)
Percentage of respondents aware of health care services	71.6 (60.5-81.1)	61.9 (54.3-69.1)	65.0 (58.8-70.8)
Percentage of respondents not aware of any services provided by ISHGs	25.9 (16.8-36.9)	31.8 (25.0-39.2)	30.0 (24.4-36.0)
Percentage of respondents that ever received ISHGs services	37.6 (28.2-47.8)	37.6 (31.3-44.2)	37.6 (32.3-43.0)
Percentage of respondents received health care services	37.6 (28.2-47.8)	35.4 (29.2-41.9)	36.1 (30.9-41.5)
Percentage of respondents ever received screening/ preventive services	37.6 (28.2-47.8)	36.2 (30.0-42.8)	36.7 (31.5-42.1)
Percentage of respondents that received blood pressure check-up	36.6 (27.3-46.8)	36.2 (30.0-42.8)	36.4 (31.2-41.8)
Percentage of respondents that had random blood sugar test	10.9 (5.6-18.7)	12.2 (8.3-17.2	11.8 (8.5-15.8)

Abbreviations

BP	Blood Pressure
COPD	Chronic Obstructive Pulmonary Disease
CRDs	Chronic Respiratory Diseases
CI	Confidence Interval
COREQ	Consolidated Criteria for Reporting Qualitative Research
DBP	Diastolic Blood Pressure
EDA	Exploratory Data Analysis
EU	European Union
FGD	Focus Group Discussions
GP	General Practitioner
HbA1c	Glycated haemoglobin
HDL	High Density Lipoproteins
ISHGs	Inclusive Self-Help Groups
IHD	Ischemic Heart Disease
KIIs	Key Informant Interviews
MOHS	Ministry of Health and Sport
NCD	Non-Communication Diseases
PEN	Package of Essential Non-Communicable Diseases
PHC	Primary Health Care
RBS	Random Blood Sugar
RHC	Rural Health Centre
SEA	South-East-Asia
SDG	Sustainable Development Goa
SBP	Systolic Blood Pressure
WHO	World Health Organization

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Chapter 1
Introduction

Non-communicable diseases (NCDs), also known as chronic diseases, are of long duration in their effects and are the result of a combination of genetic, physiological, environmental and behavioural factors (WHO, 2010). The World Health Organization (WHO) categorizes NCDs as four main types: cardiovascular disease, cancer, Chronic Respiratory Diseases (CRDs), and diabetes (WHO, 2013).

Children, adults and the elderly are all vulnerable to behavioural risk factors that contribute to NCDs, whether from unhealthy diets (high in salt, sugar and fat, and low consumption of fruits and vegetables), physical inactivity, tobacco use, or harmful use of alcohol (WHO, 2018). These behavioural risk factors cause metabolic and physiological changes in the body that lead to elevated blood pressure and blood glucose, and obesity.

According to the Global Health Observatory, out of 56.9 million global deaths in 2016, 40.5 million, or 71%, were due to NCDs (WHO, 2018). While NCDs are the leading cause of mortality worldwide, the increase in NCD prevalence in developing countries compared to developed countries has occurred at an accelerated pace and impedes the development of many nations.

In Myanmar, NCDs accounted for approximately 59% of total deaths in 2014, and the burden of NCDs increased to 68% in 2018 (WHO, 2018). The five top diseases that caused the greatest number of deaths in the country in 2017 were all NCDs: Chronic Obstructive Pulmonary Disease (COPD), followed by stroke, Ischemic Heart Disease (IHD), diabetes, and cirrhosis.

Diabetes accounted for 3% of deaths in Myanmar in 2014, and increased to 4% in 2018 (WHO, 2018). It was ranked the number one health problem causing the most disability in the country in 2017 and was in the second place in terms of causes of the most deaths and disability combined (Institute for Health Metrics and Evaluation, 2017). The overall prevalence of diabetes was 10.5%, with 9.1% among men and 11.8% among women and that increased with age (Latt TS, Zac KK, Ko K, et al, 2014). There was also significant regional variation in the prevalence of diabetes and prediabetes in the fourteen different states and regions of Myanmar. The prevalence of diabetes was the highest in Yangon region (18.2%) and the lowest in Nay Pyi Taw (4.2%).

In the STEPS 2014 survey, the overall percentage of respondents with diabetes, previously diagnosed within one year was 2.9%, while 0.7% had been diagnosed

more than one year ago. As high as 85.8% of the sampled population had never had their blood sugar measured (Latt TS, Zaw KK, Ko K, et al., 2014).

A study conducted in Yangon Region of Myanmar found differences in uptake of healthcare services between urban and rural areas. Only 26.4% of participants living in rural areas had had their blood glucose measured by a doctor or health worker, as compared to more than two-fifth (43.1%) of participants from urban areas. Additionally, the proportion of patients having controlled diabetes was higher in urban areas (45.8%) as compared to 32% in rural areas (Aung, W. P, et al., 2018).

The 2014 STEPS survey found that of the individuals previously diagnosed with diabetes 76.3% were taking oral anti-diabetic drugs, while 8.7% were taking insulin (Latt TS, Zaw KK, Ko K, et al., 2014).

Since 2015 several initiatives have been taken to address NCDs and improve public health institutes and stakeholders' capacity to address the disease transition from communicable diseases to NCDs in Myanmar. This includes projects aimed at improving university curricula on NCDs, gap analyses of research on NCDs in Myanmar, several pieces of research, and the development and roll out of the Package of Essential NCD (PEN) interventions to all 330 Township Medical Offices in the country.

These initiatives have supported the Ministry of Health and Sport (MOHS) to implement a National Strategic Action Plan for Prevention and Control of NCDs (2017-2021). The MOHS is now working on the national guidelines on prevention of major NCDs: “Evidence based treatment protocols for basic health staff” and “Primary prevention of Cardiovascular Diseases in the Community”. Despite these improvements, significant existing gaps and inequalities in the healthcare delivery system stand as weighty barriers in accessing and sustaining care and treatment for NCDs.

Over the past years, investments in rural health services have been too low, and funding has also been inadequate for expansion of universal health coverage, leaving significant gaps at the primary care level. Health inequalities are also an important factor in terms of access to health care for diabetes and other NCDs. Significant inequalities remain between rural and urban areas, and health care services do not always reach the poor and the disadvantaged groups. Quality health care for diabetes is often only available in cities where majority of physicians and diabetologists are employed.

In addition, essential medication and diagnostic facilities are not always available in primary health centres in rural areas (Latt, T., et al, 2015). Other challenges include issues related to health seeking behaviour, presence of traditional medicine, lifestyle and diet issues and issues pertaining to religion and environment (Than Than Aye, Moe Wint Aung, Ei Sandar Oo, 2014).

Besides these continuing challenges, the focus of health service provision for NCDs in Myanmar is currently hospital-cantered for acute care, and medical technology is driven towards high technology equipment for diagnosis and treatment rather than for prevention. This approach is very expensive, creating an ethical dilemma in accessing the high-tech services and is unlikely to contribute to significant reduction of the NCD burden. Instead, health promotion and preventive measures are more effective in contributing to the decrease of the burden of NCDs and are probably more cost-effective than investing in high-cost treatments. Primary health care on the other hand, is more orientated towards prevention of infectious diseases, however staff often lack training in preventive services and control of NCDs.

Capacity-building activities of health personnel have been modest till date but retaining trained health workers in diabetes and hypertension-oriented activities is a major challenge. Furthermore, community outreach programs are very limited and non-existence in the case of NCDs. People in Myanmar, especially in rural areas, often fail to address modifiable risk factors related to NCDs, due to lack of awareness on preventive measures and poor use of the locally available resources.

Community groups such as Inclusive Self-Help Groups (ISHGs) exist in Myanmar and can be means to address NCDs. However, the level of activities related to health vary widely depending on the context and on the strength of the community group. The guidelines and training materials for communities are often not validated or insufficient for the proposed activities. Volunteers often lack training and capacity to conduct health screenings, or undertake health promotion activities.

This European Union (EU) funded project, Scaling-Up NCD Interventions in South-East Asia (SUNI-SEA) is a research consortium project delivered through a collaboration of consortium members: University Medical Centre Groningen, Netherlands; University of Groningen, Netherlands; University of Passau, Germany; Trnava University, Slovak Republic; HelpAge International; Age International; Thai Nguyen University, Vietnam; Health Strategy and Policy Institute, Vietnam; and Sebelas Maret University, Indonesia.

In Myanmar, researchers from the University of Public Health, Yangon, Myanmar and HelpAge International, Myanmar are collaborating in this project. The project aims to strengthen the provision of diabetes and hypertension prevention and management services through evidence-based research in Indonesia, Myanmar and Vietnam, by better understanding effective scaling up strategies for existing NCD interventions. This project looks at both community-based activities and primary health care services as well as the synergies between these for health impact.

The critical success factors for scaling up hypertension and diabetes prevention and management measures are defined by validating:

a) The contextual factors for effective and efficient implementation of non-communicable disease (NCD) interventions.

b) The core components of community-based and health facility-based interventions.

c) The most cost-effective and sustainable scaling up strategies.

SUNI-SEA will contribute to the global NCD evidence base, contributing to the efforts of the Global Alliance for Chronic Diseases, the Global NCD Alliance and WHO. The project aims to create training and learning materials, draw lessons learned from these three countries and provide recommendations for worldwide implementation of NCD interventions. The research findings will help strengthen effective action for achieving the Sustainable Development Goals (SDGs), in particular SDG Goal 3 on health. The duration of the project is from 2019 to 2022 and is financed by the European Union.

Consequently, this retrospective study aims to understand contextual factors in the targeted implementation areas of the SUNI-SEA project in Myanmar, to lead to recommendations for effective community-based interventions for NCD prevention and management. Later, the effectiveness and cost-effectiveness of these planned interventions will be assessed, leading to recommendations for scale-up in the country.

Chapter 2

Methodology

2.1 Purpose

2.1.1 Overall objectives

The retrospective study aimed at understanding the knowledge and perception of the community on health-related activities of ISHGs and ways in which ISHGs activities can be strengthened in terms of prevention and management of hypertension and diabetes mellitus, before launching the "Scaling-up on Non-Communicable diseases in South-East Asia" (SUNI-SEA) prospective phase.

2.1.2 Specific objectives

Specific objectives of the study were as following:

1. To assess coverage and utilization of existing services regarding prevention and management of hypertension and diabetes mellitus
2. To assess the community's knowledge of prevention and management of hypertension and diabetes mellitus
3. To determine the prevalence of hypertension and diabetes mellitus in the study population
4. To assess the community's knowledge and perception of health-related activities of ISHGs
5. To explore challenges ISHG group members encountered in performing the activities related to prevention and management of hypertension and diabetes mellitus

2.2 Study design

The study used explanatory mixed methods for which the quantitative phase was followed by a qualitative phase. The quantitative component aimed at understanding the coverage and utilization of existing services regarding prevention and management of hypertension and diabetes mellitus, community's knowledge of prevention and management of hypertension and diabetes mellitus, prevalence of hypertension and diabetes mellitus in the study population and community's knowledge and perception of health-related activities of ISHG (Objectives 1-4). The qualitative component aimed at understanding challenges ISHG group members encountered in performing the activities related to prevention and management of hypertension and diabetes mellitus (objective 5).

2.3 Study population and selection criteria

Quantitative

Record and literature reviews on coverage and utilization of existing services regarding prevention and management of hypertension and diabetes were conducted. Community members of age 40 years and above who were residing in the study area for at least six months were included in the study.

Qualitative

The study population included key selected persons from existing services Package of Essential Non-Communicable Diseases *(PEN) Project* for the prevention and management of hypertension and diabetes mellitus, and group members of ISHGs for at least six months and residing in the study area for at least 6 months. Purposive sampling technique was used to select key persons of existing services and group members of ISHGs.

2.4 Study area and duration

The study was carried out in Yangon, Mandalay and Ayeyarwaddy region during January 2020. A total of 75 ISHGs existed in these three regions. A total of 660 participants aged 40 years and above were interviewed in the study from both rural and urban areas, ISHG and non-ISHG villages.

Distribution of ISHGs functional in townships

Region/ Division	Township	No of ISHGs
Ayeyarwaddy	Pathein	11
	Kangyidauk	12
	Shwe Thaung Yan	11
Yangon	East Dagon	8
	South Dagon	1
Mandalay	Pyin Oo Lwin	11
	Pathein Gyi	9
	Mattaya	12
Total		**75**

2.5 Sample size

To obtain the minimum required sample size, multistage sampling method was applied using the following formula;

$$n = z_{1-a/2}^2 \frac{1-P}{\varepsilon^2 P}$$

Where;

- n= sample size
- z = z value for respective α (type 1 error)
- P = estimated proportion
- ε = relative precision error

Using the following assumption; If the alpha error is set at 5%, z would be 1.96. For recruitment of study participants, P is estimated at 20% for those who have been diagnosed as pre-diabetes or diabetes according to STEP 2014 report and relative precision error (ε) is set at 20%. Therefore;

$n = (1.96)^2 * (0.8) / [(0.2)^2 (0.2)] = 385$

The multi-stage sampling design was used with the design effect and set at 1.5 and the nonresponse rate was assumed at 10%. Therefore, the minimum required sample size was;

n = 385*1.5/ (1-0.1) = **642 ~ 660**

2.6 Sampling procedure

Quantitative

Clusters included a ward in East and South Dagon Township of Yangon Region and village tract or villages in Ayeyarwady and Mandalay Regions. The cluster size was 55 community members in villages with ISHGs and 55 in villages without ISHGs. Therefore, a total number of twelve clusters were selected (6 ISHG village/ ward and 6 non-ISHG village/ward). Firstly, Mandalay, Yangon and Ayeyarwady Regions were purposively selected. ISHGs were present in Pyin Oo Lwin and Mattaya townships from Mandalay Region, East Dagon and South Dagon townships from Yangon Region, and Pathein and Kangyidauk townships from Ayeyarwady Region and accordingly the selections were made.

In each of the selected township, two clusters (ward or village) were selected by using stratified random sampling based on presence or absence of ISHG. The sampling frame required for first and second stages of sampling procedure was based on the ISHG data from HelpAge International. Subsequently, from each of the clusters, 55 households having at least one 40-years old household member was selected by using random walk method. Finally, one individual household

member who met the selection criteria was selected from each selected household. If there was more than one eligible member in the selected household, then one member was selected randomly.

Qualitative

A total of twelve FGDs were conducted to explore the challenges ISHG group members encountered in providing services related to prevention and management of hypertension and diabetes. From each region, two townships were selected, from which two villages: one with ISHG activities and another without ISHG were selected. In each ISHG village, two FGDs were held: one with ISHG and another with community members (non-ISHG members). Four FGDs were held in each region, with each FGD comprising of 7-9 members.

2.7 Study tools

Data collection for the quantitative study was undertaken with a structured questionnaire which included information on background characteristics of respondents, lifestyle factors, knowledge and perception on hypertension and diabetes mellitus, practices related to hypertension and diabetes mellitus, knowledge and practice regarding healthcare services provided by ISHG and accessibility to healthcare services provided by ISHG.

2.8 Operational definitions

Operational definitions, for data categorization and analysis, based on reputable sources such as WHO, were made as following:

- Current smoker is anyone who currently smokes any tobacco products.
- Current user of smokeless tobacco use is anyone who currently uses any smokeless tobacco products.
- Current drinker is anyone who drinks any alcohol product (such as beer, wine, spirits or fermented toddy palm sac or Khaung-yay) in past 30 days.
- Low consumption of fruit and vegetable is eating less than five servings of fruit and/or vegetable on average per day.
- Random Blood Glucose: This test checks individuals blood glucose at a random time of day. A level of 200 mg/dL or higher is a sign that you have diabetes.
- The glycated haemoglobin (HbA1c) testing is an index of diabetes control over the 2 to 3 months preceding the test. HbA1c readings ≥ 6.5% indicate diabetes.
- Diabetes Mellitus: Random blood sugar level equal to or greater 200 mg/dl, HbA1c level of 6.5% or higher or individuals currently taking antidiabetic medication.
- Hypertension: Systolic Blood Pressure (SBP) equal to or greater than 130 mmHg or Diastolic Blood Pressure (DBP) equal to or greater than 80 mmHg (Step 2 Measurement) or individuals currently taking antihypertensive medication
- Harmful use of alcohol is defined as having had more than 4 (for women) or 5 (for men) drinks in a single occasion at least one time over the past 30 days
- Insufficient physical activity is defined as less than 150 minutes of moderate physical activity, or less than 70 minutes of intense physical activity, or a combination of both, weekly
- Inadequate diet is defined as consuming less than 5 servings of fruits and vegetables daily
- Risk factors of hypertension. Participants were asked twelve risk factors of hypertension namely smoking; alcohol drinking; stress; ageing; diabetes; poor diet (high in salt/high in fat/type of fat); high cholesterol; obesity/overweight; lack of physical activity, pregnancy; family history and sleep Apnea.
- Symptoms of hypertension. The symptoms of hypertension included dizziness; nausea; vomiting; headache; nose bleeds; heart palpitations; breathlessness; chest pain; blurred vision; double vision and no symptom at all.
- Complications of hypertension included were cardiovascular diseases (heart attack; heart failure and aneurysm); vision defect; kidney disease; stroke and brain function and memory problem.

- Risk factors of diabetes included in this study were family history of diabetes; being overweight; history of high blood pressure; a history of low High-Density Lipoproteins (HDL); having a sedentary lifestyle and age more than 45 years.
- The common symptoms of diabetes were increased thirst, increased hunger (especially after eating); dry mouth; frequent urination or urine infections; unexplained weight loss; fatigue (weak, tired feeling); blurred vision and headaches.
- Complications of diabetes included were dental and gum diseases, eye problems and sight loss, foot problems including numbness, leading to ulcers and untreated injuries and cuts; heart disease; nerve damage including diabetic neuropathy; stroke and kidney disease.
- Knowledge on diabetes and hypertension: Participants were asked one question each regarding risk factors, symptoms, and complications of diabetes and hypertension, with several possible answers. First participants were asked to answer without probing, if they were not able to respond, answers were read out loud, and participants could answer true or false. Knowledge was categorized according to the number of total correct answers as following; no knowledge (0 answers), poor/inadequate knowledge (less than 25% of correct answers) (between 25 and 75% of correct answers) average/moderate knowledge, and good knowledge (more than 75% of correct answers).

2.9 Training of study team

Quantitative

Seven data collectors received a two-day training for conducting interviews using the structured questionnaire and measuring blood pressure and blood glucose level. Pretesting of the questionnaire was carried out in a selected township of Yangon, which was not included in the study area.

Qualitative

Six interviewers who were knowledgeable of the local context were trained to conduct Key Informant Interviews (KIIs) and FGDs. The training was conducted by the principal investigator and co-investigators, who are faculty members of University of Public Health, Yangon, Myanmar and are trained and experienced in qualitative research methods and analysis.

2.10 Data collection

Quantitative

Face to face interviews were conducted using structured schedules, which included detailed information discussed above. Each of the interviews lasted between thirty to forty-five minutes. Physiological measurements including blood pressure and blood glucose. Blood pressure measurements were taken using automatic digital blood pressure monitor. Participants were asked to sit quietly and rest for 5 minutes prior to the measurement of blood pressure. Participants were seated comfortably, with back supported, legs uncrossed, and upper arm bared. Participant's arm was supported at heart level. Cuff bladder encircled 80 percent or more of the participant's arm circumference. The sphygmomanometer cuff was placed on the left arm while their forearm was rested on a table. Neither the participants nor the person taking the measurement spoke during the measurement procedure. Pressure cuff had to be at the same level with the heart, with legs uncrossed, and in straight sitting position. Two readings were taken with one-minute interval and the average of the measurements was recorded.

Random blood glucose was measured using glucometer using finger-prick blood. Participants were required to wash their hand or to clean with alcohol to remove any residue before the blood glucose test. Participants hand were dried thoroughly as excess water or rubbing alcohol can dilute blood sample, affecting the reading. A test strip was inserted into the meter and lancing device was used on the side of participant's fingertip to get a drop of blood. Final results were obtained from the test strip.

Qualitative

The existing services related to *PEN Project* were explored through the one-to-one interview with the key informants, those who were involved in providing services for prevention and management of hypertension and diabetes mellitus. These interviews were done with group members of ISHGs at a pre-determined date, time and place. One interviewer and one note taker were always present at each interview. The FGDs were conducted with group members of ISHGs. Two voice recorders, batteries, background information sheet, notebook, clipboards, pens, pencils, FGD guide, number labels for participants and markers pen were made available. A facilitator and two note-takers conducted each of the FGDs.

Interviews and discussions were guided using an interview guide with open-ended questions. The duration of the interviews and discussions lasted about an hour,

and the interview was audio recorded after taking consent from all the participants. Notes were also taken during the interviews and discussions and important characteristics of the interviews such as demographic characteristic of participants, date, time and duration were also recorded. After the interviews and discussions finished, the interviews and discussions were summarized and read back to the participants for validation.

2.11 Quality control measures

Quantitative

Manual checking for completeness of the questionnaires and missing data was done instantly after finishing the face-to-face interview. Data codebook, rules to handle incomplete, unclear, or duplicated answers will be set prior to the data collection. Data entry was done with EpiData ver3.1.

Qualitative

For quality control, all audio recorded interviews were transcribed on the same day the interviews and discussions were conducted. The non-verbal expressions of the respondents were also included in the transcript. A manual thematic analysis was performed, and familiarization of the data was attained by repeated readings.

2.12 Data analysis

Quantitative

The data analysis was done using Stata15. Exploratory Data Analysis (EDA) was performed to check outliers, non-normal distribution, problems with coding, missing values and errors in data input. The data analysis was performed for both descriptive and analytical statistics, setting all p-values to 2-tailed distribution and a p-value <0.05 as significant.

Qualitative

The initial coding and theme generation was done by the co-investigators and reviewed by the Principal Investigator. Any disagreement between them was resolved through discussions. Codes were developed by generating both inductive and deductive codes until no new code emerged. Developed codes were grouped into themes. The themes were refined and the findings were reported by using "Consolidated Criteria for Reporting Qualitative Research (COREQ)"

2.13 Ethical considerations

Ethics approval was obtained from the Institutional Review Board of the Department of Medical Research. The purpose and detailed procedures of the study and benefits and risks of participation was explained to participants, and written informed consent was obtained from the study participants. The consent form had two parts: information for the participant and the actual consent form, which required participant signature in the presence of a witness. Interviews, and blood test were conducted in a manner that ensured confidentiality and privacy of the study participants. Only minimal amount of blood was collected through finger prick for blood sugar, using aseptic technique and disposable lancet. If the random blood sugar was found to be out of normal range, the respondent was immediately referred to a physician.

2.14 Study limitations

Possible selection bias as females are over-represented in comparison to males. As the study was conducted during the day time and at the household level, potential male respondents may have been at work and thus less likely to have participated in the study if they were selected. Since working males are generally healthier than those who stay at home, the estimated prevalence rates may be over or under estimation of chronic diseases or risk factors. Self-reporting is a concern in all epidemiological studies as it may lead to under or over estimation.

Chapter 3

Results

This chapter includes detailed analysis of respondent's background information, lifestyle, knowledge of hypertension and diabetes mellitus, health status including general health status, history and treatment for hypertension and diabetes mellitus. Information on knowledge and practices related to services provided by ISHGs; accessibility to ISHGs were analysed. Blood pressure and blood glucose measurement readings have also been included.

3.1 Background information

The study collected data on respondent's age (completed), gender, residence, highest level of schooling completed, current marital status, occupational status and average family monthly income (in Kyats). (Table 3.1) A total of 660 respondents comprising of 179 males and 481 females were interviewed for this study.

3.1.1 Age

The variable age has strong associations with lifestyle behaviours including tobacco smoking, alcohol consumption, physical exercise, and dietary practices. NCDs like hypertension and diabetes are also known to be positively associated with age.

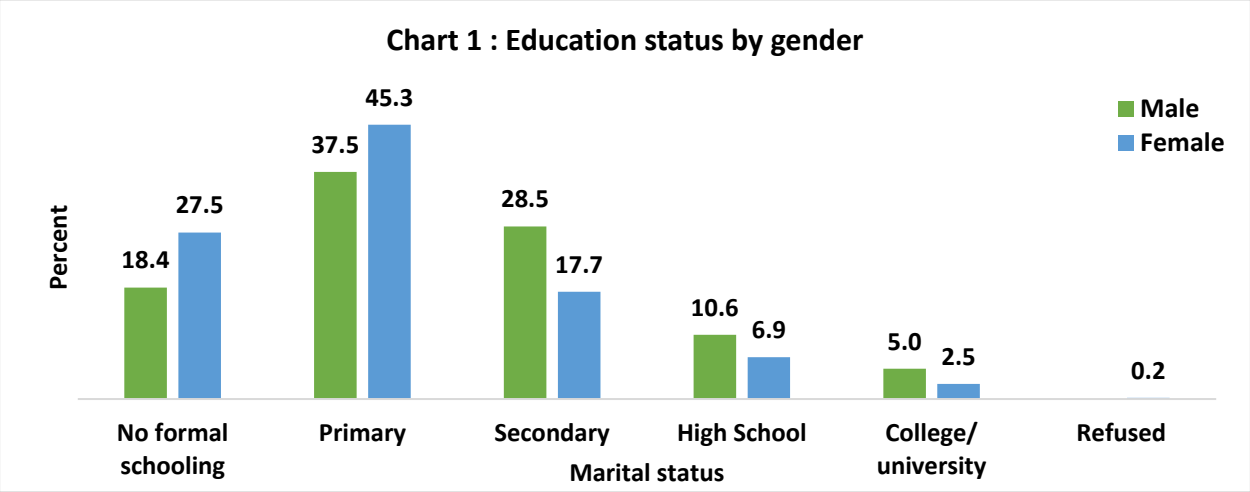
The mean age of the sampled population was 57.5 years (Table 3.1). The mean age of male respondents was 59.9 years as against females' mean age of 56.6 years. More than half of the male (54.2 percent) and 37.2 percent of female respondents were aged above 60 years.

3.1.2 Residence

Based on the place of residence all respondents were classified as being rural or urban residents. Overall, more than three-fifth respondents (61.5 percent) were living in rural areas. Slightly less than three-fifth of female (59.0 percent) and more than two-thirds of male respondents (68.2 percent) were rural based.

3.1.3 Education

Significant differentials in education level by gender were observed. Less than one-fifth of male (18.4 percent) and more than one-quarter females (27.5 percent) had no formal schooling. The proportion of respondents that had completed at least high school was dismally low, among both males (16.6 percent) and females (9.4 percent).



3.1.4 Marital status

Overall, less than three-quarters of the total respondents (71.2 percent) were currently married while 24.4 percent were separated/divorced/widowed and 4.1 percent had never been married (Table 3.1). While 84.9 percent males were currently married, the corresponding value among females was considerably lower at 66.1 percent. As high as 29.3 percent of females were currently separated/divorce/ widowed which is 2.6 times that of males (11.2 percent).

3.1.5 Occupation

Slightly less than two-third of males (64.8 percent) were employed/self-employed while 30.2 percent were unemployed. Around 45.9 percent females were employed/ self-employed and one-third (32.3 percent) were unpaid/ homemakers followed by 21.8 percent unemployed. Almost half (48.9 percent) of the total sampled population was not gainfully employed, implying that a huge proportion of respondents are dependents.

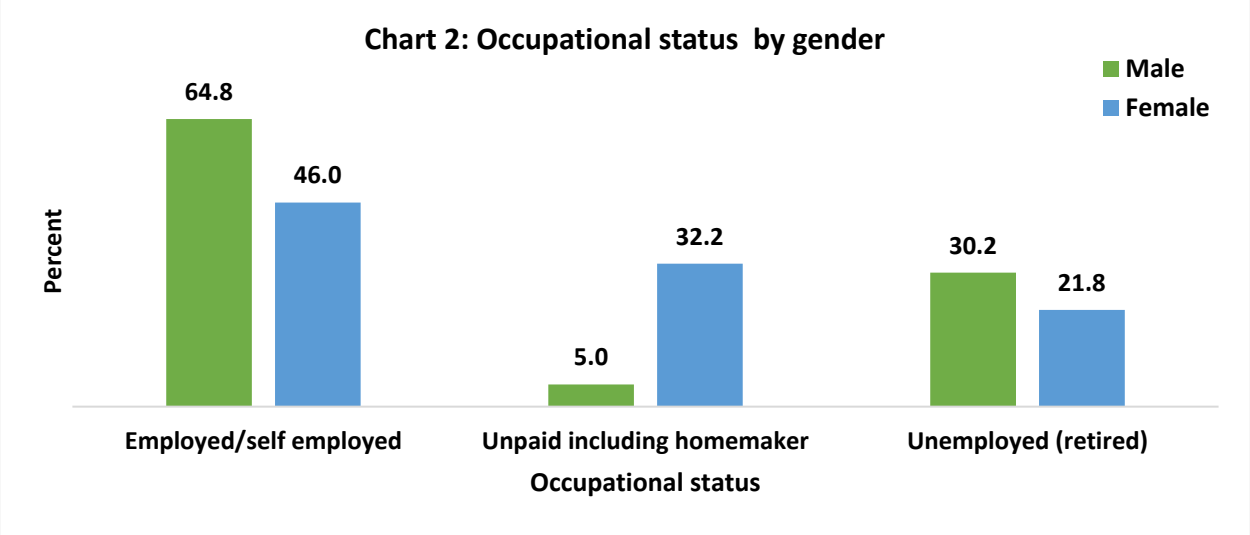


Table 3.1 Background characteristics of respondents

Background Characteristics	Male n	Male %	Male CI 95%	Female n	Female %	Female CI 95%	Total n	Total %	Total CI 95%
Age (years)									
40 – 49	34	19.0	13.5-25.5	140	29.1	25.1-33.4	174	26.4	23.0-29.9
50 – 59	48	26.8	20.5-33.9	162	33.7	29.5-38.1	210	31.8	28.3-35.5
60 – 69	61	34.1	27.2-41.5	119	24.7	20.9-28.8	180	27.3	23.9-30.8
≥70	36	20.1	14.5-26.7	60	12.5	9.7-15.8	96	14.5	11.9-17.5
Mean (years)	*59.9*		*58.4-61.6*	*56.6*		*55.7-57.3*	*57.5*		56.7-58.3
Residence									
Urban	57	31.8	25.1-39.2	197	41.0	36.5-45.5	254	38.5	34.8-42.3
Rural	122	68.2	60.8-74.9	284	59.0	54.5-63.5	406	61.5	57.7-65.2
Education									
No formal schooling	33	18.4	13.0-24.9	132	27.5	23.5-31.7	165	25.0	21.7-28.5
Primary	67	37.5	30.3-45.0	218	45.3	40.8-49.9	285	43.2	39.4-47.1
Secondary	51	28.5	22.0-35.7	85	17.7	14.4-21.4	136	20.6	17.6-23.9
High School	19	10.6	6.5-16.1	33	6.9	4.8-9.5	52	7.9	5.9-10.2
College/university	9	5.0	2.3-9.3	12	2.5	1.3-4.3	21	3.2	2.0-4.8
Refused	-	-	-	1	0.2	0.0-1.2	1	0.2	0.0-0.8
Marital status									
Never married	7	3.9	1.6-7.9	20	4.2	2.6-6.3	27	4.1	2.7-5.9
Currently married	152	84.9	78.8-89.8	318	66.1	61.7-70.3	470	71.2	67.6-74.6
Separated/divorced/ widowed	20	11.2	7.0-16.7	141	29.3	25.3-33.6	161	24.4	21.2-27.9
Refused	-	-	-	2	0.4	0.1-1.5	2	0.3	0.0-1.1
Occupation									
Employed/ self employed	116	64.8	57.3-71.8	221	46.0	41.4-50.5	337	51.1	47.2-54.9
Unpaid including homemaker	9	5.0	2.3-9.3	155	32.2	28.1-36.6	164	24.8	21.6-28.3
Unemployed(retired)	54	30.2	23.5-37.5	105	21.8	18.2-25.8	159	24.1	20.9-27.5
Average family monthly income (kyats)									
≤90000	16	8.9	5.2-14.1	37	7.7	5.4-10.4	53	8.0	6.1-10.4
90001-150000	40	22.4	16.5-29.2	89	18.5	15.1-22.2	129	19.5	16.6-22.8
150001-250000	21	11.7	7.4-17.4	62	12.9	10.0-16.2	83	12.6	10.1-15.3
250001-400000	29	16.2	11.1-22.4	72	15.0	11.9-18.5	101	15.3	12.6-18.3
≥ 400001	17	9.5	5.6-14.7	64	13.3	10.4-16.7	81	12.3	9.9-15.0
Refused	56	31.3	24.6-38.6	157	32.6	28.5-37.0	213	32.3	28.7-36.0
Mean (Kyats)	*274935*		*219398-330473*	*296125*		*264081-328169*	*290294*		262510-318078
Total	**179**	**100.0**		**481**	**100.0**		**660**	**100.0**	

Percent are column percentages.

3.1.6 Income

The overall average monthly family income was 290294 Kyats, while the median was 200,000. Income was calculated on the basis of quintiles. The average monthly

family income of male respondents was 274935 Kyats while that of females was 296125. This indicator had a refusal rate as high as one-third (32.3 percent).

3.2 Lifestyle (Behavioural measurements)

A healthy lifestyle is one which helps to keep and improve people's health and well-being. The different ways to being healthy includes healthy eating, physical activities, weight management, and stress management.

Globally several million people follow an unhealthy lifestyle and subsequently encounter illness, disability and death. Lifestyle diseases include atherosclerosis, heart disease and stroke; obesity and type 2 diabetes; and diseases associated with smoking, alcohol and drug abuse.

3.2.1 Tobacco smoking

Tobacco smoking is associated with a wide range of diseases, including several types of cancers, heart and lung diseases, diabetes, eye disease, and rheumatoid arthritis. The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing more than 8 million people a year. More than 7 million of those deaths are the result of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to passive smoking. [1].

The study included questions on current and daily smoking practices, age at starting smoking, type of tobacco products smoked, and use of smokeless tobacco products (Table 3.2). Tobacco products includes cigarettes (hand rolled and manufactured), cigars, pipes and cheroots.

3.2.1.1 Current tobacco smoking

Slightly more than one-fifth (21.2 percent) of the total sampled respondents reported currently smoking tobacco products. There was a marked difference of 22.2 percentage points in the prevalence of current smoking between male (37.4 percent) and female (15.2 percent) respondents.

3.2.1.2 Daily tobacco smoking

All current smokers (n-140) were enquired whether they smoked tobacco products on a daily basis. As high as 89.6 percent of current male smokers, smoked tobacco on a daily basis, as compared to 86.3 percent females. Overall, almost 9 out of 10 current smokers were daily smokers.

3.2.1.3 Mean age at initiating smoking

The mean age of initiating smoking among males was 20.2 years while among females it was 25.2 years. The fact that 55.2 percent of male smokers started

smoking below 20 years as compared to 37.5 percent females, raises questions on government regulation that allows youngsters access to tobacco products. Another interesting phenomenon is that as high as 51.4 percent females started smoking after attaining the age of 25 years.

Table 3.2 Tobacco consumption patterns

Tobacco consumption	Male			Female			Total		
	n	**%**	**CI 95%**	**n**	**%**	**CI 95%**	**n**	**%**	**CI 95%**
Currently smoking tobacco products	67	37.4	30.3-45.0	73	15.2	12.1-18.7	140	21.2	18.2-24.5
Total (n)		**179**			**481**			**660**	
Smoking tobacco products daily*	60	89.6	79.7-95.7	63	86.3	76.2-93.2	123	87.9	81.3-92.8
Total (n)		**67**			**73**			**140**	
Age at which daily smokers started smoking (years)**									
≤ 14	13	19.4	10.8-30.9	7	9.7	4.0-19.0	20	14.4	9.0-21.3
15-19	24	35.8	24.5-48.5	20	27.8	17.9-39.6	44	31.6	24.0-40.1
20-24	17	25.4	15.5-37.5	8	11.1	4.9-20.7	25	18.0	12.0-25.4
≥ 25	13	19.4	10.8-30.9	37	51.4	39.3-63.3	50	36.0	28.0-44.5
Mean (years)	*20.2*		*17.9-22.6*	*25.2*		*22.4-28.0*	*22.8*		*20.9-24.7*
Total (n)		**67**			**72**			**139**	
Type of tobacco product smoked* #									
Manufactured Cigarettes	9	13.4	6.3-24.0	2	2.7	0.3-9.5	11	7.9	4.0-13.6
Hand-rolled Cigarettes	7	10.4	4.3-20.3	8	10.9	4.9-20.5	15	10.7	6.1-17.1
Pipes with tobacco	2	3.0	0.4-10.4	1	1.4	0.0-7.4	3	2.1	0.4-6.1
Cigars, cheroots, cigarillos & Others	52	77.6	65.8-86.9	62	84.9	74.6-92.2	114	81.4	74.0-87.5
Total (n)		**67**			**73**			**140**	
Currently using smokeless tobacco products	91	50.8	43.3-58.4	166	34.5	30.3-38.9	257	38.9	35.2-42.8
Total (n)		**179**			**481**			**660**	
Using betel quid $	91	100.0		166	100.0		257	100.0	
Total (n)		**91**			**166**			**257**	

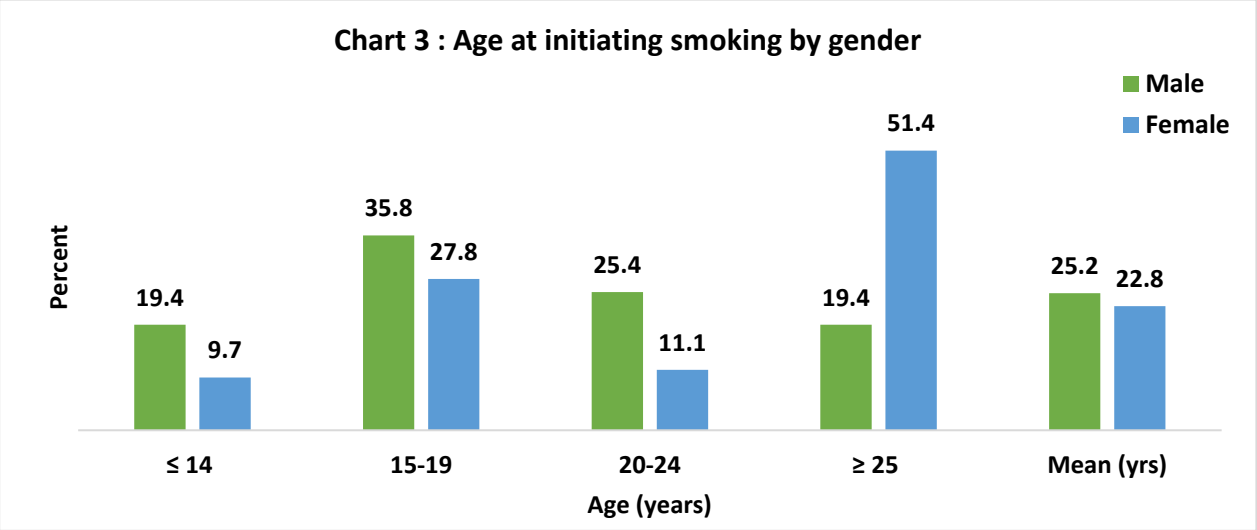
* Calculated from respondents that were currently smoking #Multiple responses possible, total may exceed 100%.

** Calculated from respondents that reported smoking on a daily basis and were aware of age at starting smoking (1 female missing)

$ Calculated from those respondents that were currently using smokeless tobacco products

3.2.1.4 Type of tobacco product smoked

All daily smokers were enquired about the type of tobacco product smoked by them. More than three-fourth of male (77.6 percent) and 84.9 percent of female smokers reported smoking cigars, cheroots, cigarillos and other products.



3.2.1.5 Type of smokeless tobacco product used

Slightly more than half of the male (50.8 percent) and 34.5 percent of female respondents reported using smokeless tobacco products. Use of betel quid among the respondents that used smokeless tobacco products was universal.

3.2.2 Daily Tobacco smoking by background characteristics

3.2.2.1 Daily tobacco smoking by age

Male respondents belonging to the 50-59 years age group had the highest prevalence (39.6 percent) of daily smoking tobacco products (Table 3.3). Male respondents displayed no clear pattern of daily smoking by age. Females exhibited an increasing prevalence of daily smoking with increasing age. The prevalence of daily smoking among male respondents aged 40-49 years was 8 times higher than females in the corresponding age group.

3.2.2.2 Daily tobacco smoking by residence

One-third of male respondents in both urban and rural areas reported daily tobacco smoking. The daily smoking prevalence among rural females (17.3 percent) was 2.4 times more than that of urban females (7.1 percent). Prevalence of daily smoking among urban males was 33.3 percent which was almost 5 times that of urban females (7.1 percent).

3.2.2.3 Daily tobacco smoking by education

The prevalence of daily tobacco smoking decreased with increasing education level among both males and females, however this is more marked among females. While 42.4 percent of males with no formal schooling smoked tobacco daily, the

corresponding figures among college/university educated respondents was only 11.1 percent. The differentials in the prevalence of daily smoking between both genders increased with increase in education level.

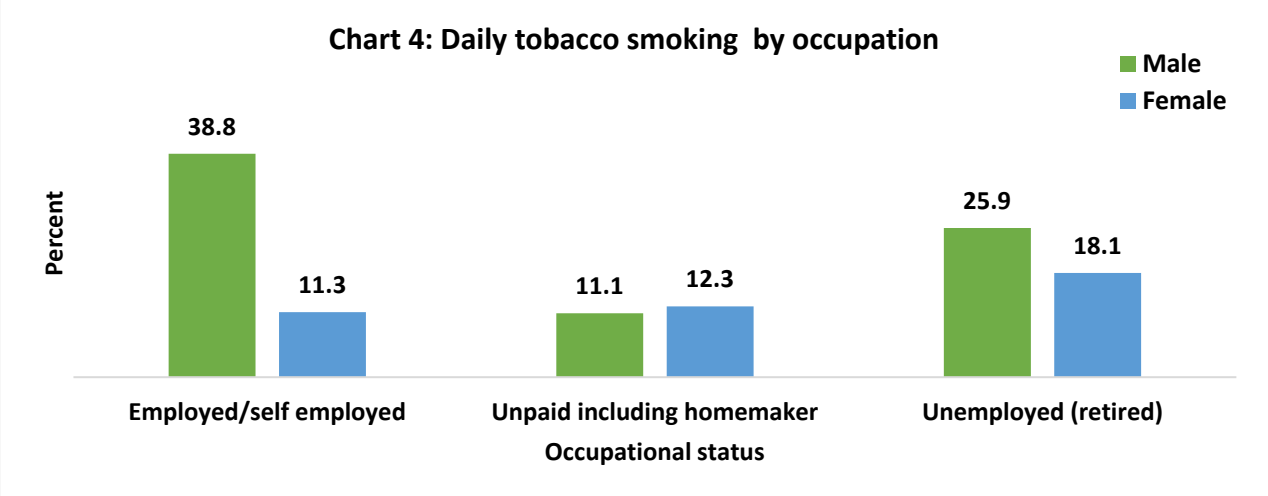
Table 3.3 Daily tobacco smokers by background characteristics

Background Characteristics	Daily Tobacco smokers*											
	Male				Female				Total			
	n	n	%	CI 95%	n	n	%	CI 95%	n	n	%	CI 95%
Age (years)												
40 – 49	34	8	23.5	10.7-41.2	140	4	2.9	0.8-7.2	174	12	6.9	3.6-11.7
50 – 59	48	19	39.6	25.8-54.7	162	26	16.1	10.8-22.6	210	45	21.4	16.1-27.6
60 – 69	61	23	37.7	25.6-51.0	119	22	18.5	12.0-26.6	180	45	25.0	18.9-32.0
≥ 70	36	10	27.8	14.2-45.2	60	11	18.3	9.5-30.4	96	21	21.9	14.1-31.5
Residence												
Urban	57	19	33.3	21.4-47.1	197	14	7.1	3.9-11.6	254	33	13.0	9.1-17.8
Rural	122	41	33.6	25.3-42.7	284	49	17.3	13.0-22.2	406	90	22.2	18.2-26.5
Education												
No formal schooling	33	14	42.4	25.5-60.8	132	31	23.5	16.5-31.6	165	45	27.3	20.6-34.7
Primary	67	22	32.8	21.8-45.4	218	28	12.8	8.7-18.0	285	50	17.5	13.3-22.5
Secondary	51	17	33.3	20.8-47.9	85	3	3.5	0.7-10.0	136	20	14.7	9.2-21.8
High School	19	6	31.6	12.6-56.6	33	1	3.0	0.1-15.8	52	7	13.5	5.6-25.8
College/University	9	1	11.1	0.3-48.2	12	0	0.0		21	1	4.8	0.1-23.8
Refused					1	0	0.0		1	0	0.0	
Marital status												
Never married	7	2	28.6	3.7-71.0	20	4	20.0	5.7-43.7	27	6	22.2	8.6-42.3
Currently married	152	50	32.9	25.5-41.0	318	36	11.3	8.1-15.3	470	86	18.3	14.9-22.1
Separated/ divorced/widowed	20	8	40.0	19.1-63.9	141	23	16.3	10.6-3.5	161	31	19.3	13.5-26.2
Refused					2	0	0.0		2	0	0.0	
Occupation												
Employed/self employed	116	45	38.8	29.9-48.3	221	25	11.3	7.5-16.2	337	70	20.8	16.6-25.5
Unpaid including homemaker	9	1	11.1	0.3-48.2	155	19	12.3	7.5-18.5	164	20	12.2	7.6-18.2
Unemployed (retired)	54	14	25.9	15.0-39.7	105	19	18.1	11.3-26.8	159	33	20.8	14.7-27.9
Average family monthly income (kyats)												
≤ 90000	16	6	37.5	15.2-64.6	37	9	24.3	11.8-41.2	53	15	28.3	16.8-42.3
90001-150000	40	16	40.0	24.9-56.7	89	12	13.5	7.2-22.4	129	28	21.7	14.9-29.8
150001-250000	21	7	33.3	14.6-57.0	62	5	8.1	2.7-17.8	83	12	14.5	7.7-23.9
250001-400000	29	9	31.0	15.3-50.8	72	6	8.3	3.1-17.3	101	15	14.9	8.6-23.3
≥ 400001	17	8	47.1	23.0-72.2	64	5	7.8	2.6-17.3	81	13	16.1	8.8-25.9
Refused	56	14	25.0	14.4-38.4	157	26	16.6	11.1-23.3	213	40	18.8	13.8-24.7
Total	**179**	**60**	**33.5**	**26.7-40.9**	**481**	**63**	**13.1**	**10.2-26.4**	**660**	**123**	**18.6**	**15.7-21.8**

3.2.2.4 Daily tobacco smoking by marital status

Daily smoking among currently unmarried males was 40.0 percent, followed by currently married (32.9 percent) and never married (28.6 percent). Among females who never married (20.0 percent) had the highest smoking prevalence.

Daily smoking among currently married males was almost three times that of currently married females.



3.2.2.5 Daily tobacco smoking by occupation

Slightly less than two-fifths of employed male respondents (38.8 percent) were daily smokers which is considerably higher than among unemployed (25.9 percent) and unpaid males (11.1 percent) (Table 3.3). Among female respondents the differentials in prevalence of daily smoking by occupation were less marked and highest among the unemployed (18.1 percent). Employed males (38.8 percent) were more than three times more likely to be daily smokers than employed females (11.3 percent).

3.2.2.6 Daily tobacco smoking by income

No definite pattern in the prevalence of daily smoking among males by income emerged. Male respondents belonging to the highest income group (≥ 400001 Kyats) had the highest prevalence of daily smoking (47.1 percent). Prevalence of daily smoking among females decreased with increase in income levels. Females from the lowest income (≤90000) had over three times higher prevalence of daily smoking compared to those belonging to the highest income group.

3.2.3 Alcohol consumption

The harmful use of alcohol causes several diseases, social and economic burden in communities. Alcohol-related harm is determined by the volume of alcohol consumed, the pattern of drinking, and also the quality of alcohol consumed. The harmful use of alcohol is a component cause of more than two hundred disease and injury in individuals, most notably alcohol dependence, liver cirrhosis, cancers, and injuries.

The Global status report on alcohol and health 2018 estimates that, more than 3 million people died as a result of harmful use of alcohol in 2016, which represents 1 in 20 deaths. More than three quarters of these deaths were among men. Overall, the harmful use of alcohol causes more than 5 percent of the global disease burden.[2] The study included questions on consumption of alcohol on the basis of frequency i.e. ever, within past 12 months, and past 30 days.

Table 3.4 Alcohol consumption among respondents

Alcohol consumption	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Respondents ever consumed alcohol	47	26.3	20.0-33.3	5	1.0	0.3-2.4	52	7.9	5.9-10.2
Total (n)	**179**			**481**			**660**		
Consumed alcohol during past 12 months *	41	87.2	74.3-95.2	5	100.0	-	46	88.5	76.6-95.6
Consumed alcohol during past 30 days*	39	83.0	69.2-92.4	2	40.0	5.3-85.3	41	78.8	65.3-88.9
Total (n)	**47**			**5**			**52**		
Frequency of consuming alcohol (≥1 drink) **									
Daily	10	24.4	12.4-40.3				10	21.7	10.9-36.4
5-6 times a week	2	4.9	0.6-16.5				2	4.3	0.5-14.8
1-4 times a week	1	2.4	0.1-12.9				1	2.2	0.1-11.5
1-3 times a week	5	12.2	4.1-26.2	4	80.0	28.4-99.5	9	19.6	9.4-33.9
Less than once a month	23	56.1	39.7-71.5	1	20.0	0.5-71.6	24	52.2	36.9-67.1
Total (n)	**41**			**5**			**46**		

* Calculated from respondents that reported having ever consumed alcohol

** Calculated from respondents that reported having consumed alcohol within past 12 months

3.2.3.1 Ever consumed alcohol

Overall, one-twelfth of respondents reported ever consuming alcohol. More than one fourth of male (26.3 percent) and only 1.0 percent female respondents cited ever consuming alcohol (Table 3.4).

3.2.3.2 Consumed alcohol within past 12 months

Out of the respondents (52 number) that had ever consumed alcohol, 88.5 percent had consumed alcohol during the past 12 months. Around 87.2 percent of male members and all females (5 number) reported consuming alcohol during the past 12 months.

3.2.3.3 Consumed alcohol within past 30 days

Slightly less than four-fifth of the respondents (78.8 percent) that had ever consumed alcohol reported consuming alcohol during the past 30 days. More than four-fifth of males (83 percent) reported consuming alcohol within past 30 days while 2 out of the 5 females reported the same.

3.2.3.4 Frequency of alcohol consumption

Respondents were probed for the frequency of consuming at least one alcoholic drink during the past 12 months. Less than three-fifth of males (56.1 percent) reported consuming alcohol less than once a month, while one quarter (24.4 percent) reported drinking on a daily basis. Out of the total 5 females that consumed alcohol during the last 12 months, 4 (nos) consumed at least one alcoholic drink between 1-3 times a week.

3.3 Active Lifestyle

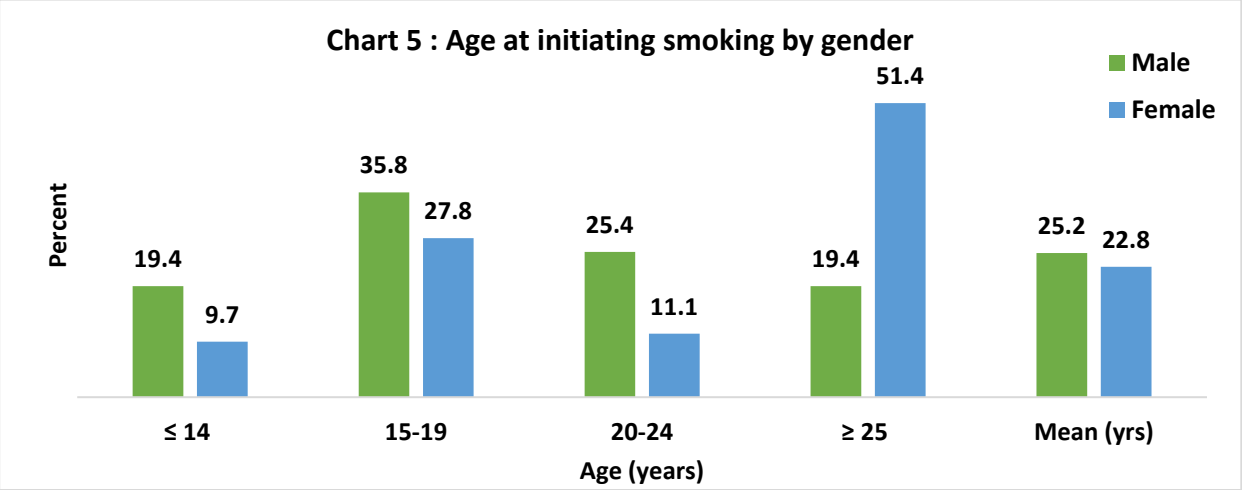
In adults aged 18 years and above, physical activity includes leisure time physical activity including walking, dancing, gardening, hiking, swimming, transportation (i.e. walking or cycling), occupational i.e. work, household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities.

Overall, there is strong evidence which demonstrates that compared to less active adult men and women, individuals who are more active have lower rates of all-causes of mortality, coronary heart disease, high blood pressure, stroke, type 2 diabetes, metabolic syndrome, colon and breast cancer, and depression.

3.3.1 Type of physical activity performed

Respondents were probed about the physical activity or exercise undertaken during the past one month (Table 3.5). More than two-fifths of the total respondents (42.4 percent) reported moderate exercise during free time, followed by moderate physical activity in workplace (38.5 percent) and then no physical activity (21.5 percent).

Around one-fifth of male (19.6 percent) and 22.3 percent of females reported undertaking no physical exercise during the past month. Around 45.8 percent of male respondents reported moderate exercise during free time while one-third of male respondents reported undertaking moderate physical activity in workplace. The corresponding figures among females was 41.2 percent and 40.5 percent respectively.



3.3.2 Frequency of activity performed

Respondents that performed any activity were enquired about the frequency of activity undertaken per week. While 85.7 percent of total respondents reported undertaking physical activity five or more times a week, with only marginal differences based on gender.

Table 3.5 Types of physical activity undertaken by respondents

	Male			Female			Total		
Physical activity	**n**	**%**	**CI 95%**	**n**	**%**	**CI 95%**	**n**	**%**	**CI 95%**
Types of physical exercise performed #									
Heavy physical activity in workplace	8	4.5	1.9-8.6	2	0.4	0.1-1.5	10	1.5	0.7-2.8
Moderate physical activity in workplace	59	33.0	26.1-40.4	195	40.5	36.1-45.1	254	38.5	34.8-42.3
Heavy exercise in free time	0	0.0		2	0.4	0.1-1.5	2	0.3	0.0-1.1
Moderate exercise in free time	82	45.8	38.4-53.4	198	41.2	36.7-45.7	280	42.4	38.6-46.3
Other*	7	3.9	1.6-7.9	18	3.7	2.2-5.8	25	3.8	2.5-5.5
No Physical Activity	35	19.6	14.0-26.1	107	22.3	18.6-6.2	142	21.5	18.4-24.8
Total (n)		**179**			**481**			**660**	
Activity practiced in a week on average*									
≤2	7	4.9	1.9-9.8	26	7.0	4.6-10.0	33	6.4	4.4-8.8
3-4	18	12.5	7.6-19.0	27	7.2	4.8-10.3	45	8.7	6.4-11.5
5-6	20	13.9	8.7-20.6	49	13.1	9.8-16.9	69	13.3	10.5-16.6
≥7	99	68.7	60.5-76.2	272	72.7	67.9-77.2	371	71.6	67.5-75.5
Avg. times exercise is practiced (weekly)		*6.1*			*6.3*			*6.2*	
Avg. minutes per day activity is practiced		*125.6*			*122.2*			*123.1*	
Total (n)		**144**			**374**			**518**	

* Calculated from respondents that reported some physical activity.

Multiple responses possible total may exceed 100%

3.3.3 Average time of physical activity performed

Respondents were enquired about the number of times per week that they undertake physical activity. Male respondents (6.1) had a slightly lower average than females (6.3), while the average number of times a person exercises in a week for all respondents was 6.2. The average time spent by respondents in physical activity was 123.1 minutes per day with no marked differentials between males (125.6 minutes) and females (122.2 minutes).

3.3.4 Insufficient physical activity

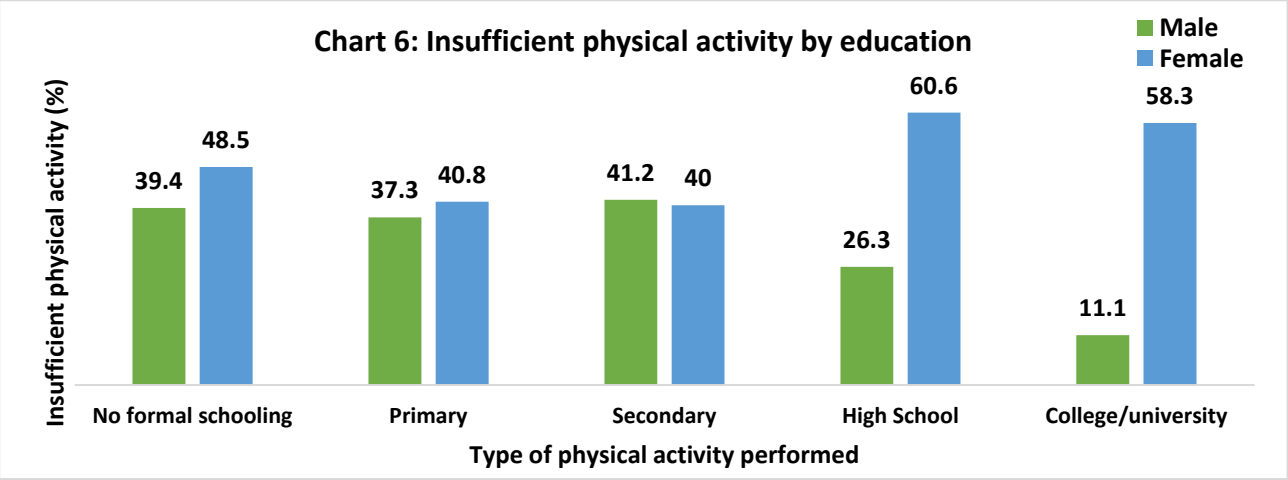
Insufficient physical activity for the purpose of this study is defined as undertaking no physical activity or less than 150 minutes of physical activity per week. Overall, 42.2 percent of the total respondents reported insufficient physical activity (Table 3.6). One-third of males (36.3 percent) and 44.7 percent of females reported physical inactivity.

3.3.4.1 Insufficient physical activity by age

No clear pattern of insufficient physical activity by respondents' age emerged. Both male (50.0 percent) and female (68.3 percent) belonging to the oldest age group, 70 years and above, had the highest insufficient physical activity. For every age group, females had higher rate of insufficient physical activity than males belonging to the same age group.

3.3.4.2 Insufficient physical activity by residence

Urban respondents (50.8 percent) reported significant higher levels of insufficient physical activity than rural (37.2 percent) respondents. Urban male respondents had 8.5 percentage points higher physical inactivity rates than their rural counterparts. Urban female respondents had almost one and a half times higher insufficient physical activity rate than their rural counterparts.



3.3.4.3 Insufficient physical activity by education

Nearly half of the total respondents (48.1 percent) with high school education reported insufficient physical activity. No clear pattern of physical inactivity by education was observed in both males and females

Table 3.6 Insufficient physical activity by respondent's background characteristics

Background Characteristics	Male				Female				Total			
	n	n	%	CI 95%	n	n	%	CI 95%	n	n	%	CI 95%
Age (years)												
40 – 49	34	12	35.3	19.7-53.5	140	59	42.1	33.9-50.8	174	71	40.8	33.4-48.5
50 – 59	48	17	35.4	22.2-50.5	162	61	37.7	30.2-45.6	210	78	37.1	30.6-44.1
60 – 69	61	18	29.5	18.5-42.6	119	54	45.4	36.2-54.8	180	72	40.0	32.8-47.6
≥ 70	36	18	50.0	32.9-67.1	60	41	68.3	55.0-79.7	96	59	61.5	51.0-71.2
Residence												
Urban	57	24	42.1	29.1-55.9	197	105	53.3	46.1-60.4	254	129	50.8	44.4-57.1
Rural	122	41	33.6	25.3-42.7	284	110	38.7	33.0-44.7	406	151	37.2	32.5-42.1
Education												
No formal schooling	33	13	39.4	22.9-57.9	132	64	48.5	39.7-57.3	165	77	46.7	38.9-54.6
Primary	67	25	37.3	25.8-50.0	218	89	40.8	34.2-47.7	285	114	40.0	34.3-45.9
Secondary	51	21	41.2	27.6-55.8	85	34	40.0	29.5-51.2	136	55	40.4	32.1-49.2
High School	19	5	26.3	9.1-51.2	33	20	60.6	42.1-77.1	52	25	48.1	34.0-62.4
College/university	9	1	11.1	0.3-48.2	12	7	58.3	27.7-84.8	21	8	38.1	18.1-61.6
Refused					1	1	100.0		1	1	100.0	
Marital status												
Never married	7	1	14.3	0.4-57.9	20	8	40.0	19.1-63.9	27	9	33.3	16.5-54.0
Currently married	152	53	34.9	27.3-43.0	318	140	44.0	38.5-49.7	470	193	41.1	36.6-45.7
Separated/ Divorced widowed	20	11	55.0	31.5-76.9	141	65	46.1	37.7-54.7	161	76	47.2	39.3-55.2
Refused					2	2	100.0		2	2	100.0	
Occupation												
Employed/self employed	116	33	28.5	20.5-37.6	221	68	30.8	24.8-37.3	337	101	30.0	25.1-35.2
Unpaid includes homemaker	9	5	55.6	21.2-86.3	155	71	45.8	37.8-54.0	164	76	46.3	38.5-54.3
Unemployed (retired)	54	27	50.0	36.1-63.9	105	76	72.4	62.8-80.7	159	103	64.8	56.8-72.1
Average monthly family Income (kyats)												
≤90000	16	7	43.8	19.8-70.1	37	10	27.0	13.8-44.1	53	17	32.1	19.9-46.3
90001-150000	40	10	25.0	12.7-41.2	89	35	39.3	29.1-50.3	129	45	34.9	26.7-43.8
150001-250000	21	8	38.1	18.1-61.6	62	26	41.9	29.5-55.2	83	34	41.0	30.3-52.3
250001-400000	29	9	31.0	15.3-50.8	72	26	36.1	25.1-48.3	101	35	34.7	25.5-44.8
≥ 400001	17	2	11.8	1.5-36.4	64	32	50.0	37.2-62.8	81	34	42.0	31.1-53.5
Refused	56	29	51.8	38.0-65.3	157	86	54.8	46.6-62.7	213	115	54.0	47.0-60.8
Total	**179**	**65**	**36.3**	**29.3-43.8**	**481**	**215**	**44.7**	**40.2-49.3**	**660**	**280**	**42.2**	**38.6-46.3**

* Insufficient physical activity is defined as undertaking no physical activity or less than 150 minutes of physical activity weekly

3.3.4.4 Insufficient physical activity by marital status

Overall, 47.2 percent of the currently unmarried respondents reported insufficient physical activity as compared to 41.1 percent among currently married individuals.

Two-fifth of currently married (44.0 percent) and 46.1 percent of unmarried females reported insufficient physical activity. The corresponding figure among male respondents was 34.9 and 55.0 percent respectively.

3.3.4.5 Insufficient physical activity by occupation

Respondents that were employed (30.0 percent) had much lower rates of insufficient physical activity compared to unpaid (including home makers) persons (46.3 percent) and unemployed persons (64.8 percent). More than one-fourth of male employed/self-employed respondents reported insufficient physical activity, 27.1 and 21.5 percentage points lower than unpaid and unemployed respondents respectively. Physical inactivity rates among unemployed females (72.4 percent) were much higher than among unpaid (45.8 percent) and employed female (30.8 percent).

3.3.4.6 Insufficient physical activity by family income

No clear pattern of Insufficient physical activity among both genders by average family income emerged. Male respondents belonging to the lowest income group had the highest insufficient physical inactivity (43.8 percent) and those from the highest income, the lowest (11.8 percent). A marked difference of 23.0 percentage points in insufficient physical activity among women respondents between the highest and lowest income groups was recorded.

3.4 Healthy eating

Fruits and vegetables are essential components of a healthy diet. A reduced fruit and vegetable diet are linked to poor health and increased risk of NCDs. Based on WHO [3], an estimated 3.9 million deaths worldwide were attributable to inadequate fruit and vegetable consumption in 2017. The risk of certain NCDs including cardiovascular diseases and certain types of cancer may be reduced by including fruits and vegetables as part of the daily diet. When they are consumed as part of a healthy diet low in fat, sugars and salt/sodium, fruits and vegetables may also help to prevent weight gain and reduce the risk of obesity, an independent risk-factor for NCDs.

Fruits and vegetables are rich sources of vitamins and minerals, dietary fibre and a host of beneficial non-nutrient substances including plant sterols, flavonoids and other antioxidants and consuming a variety of fruits and vegetables helps to ensure an adequate intake of many of these essential nutrients. Respondents were probed for their pattern and frequency of consuming vegetables and fruits. They were also asked about the type of oil or fat that they used for meal preparation.

3.4.1 Fruit consumption

Respondents reported consuming fruits a mean of 3.0 times a week (Table 3.7). Females reported consuming fruits an average 3.1 times a week, compared to 2.5 times a week by males. Both male and female respondents consumed an average of 1.4 serving of fruit per day.

Table 3.7 Consumption of fruits and vegetables

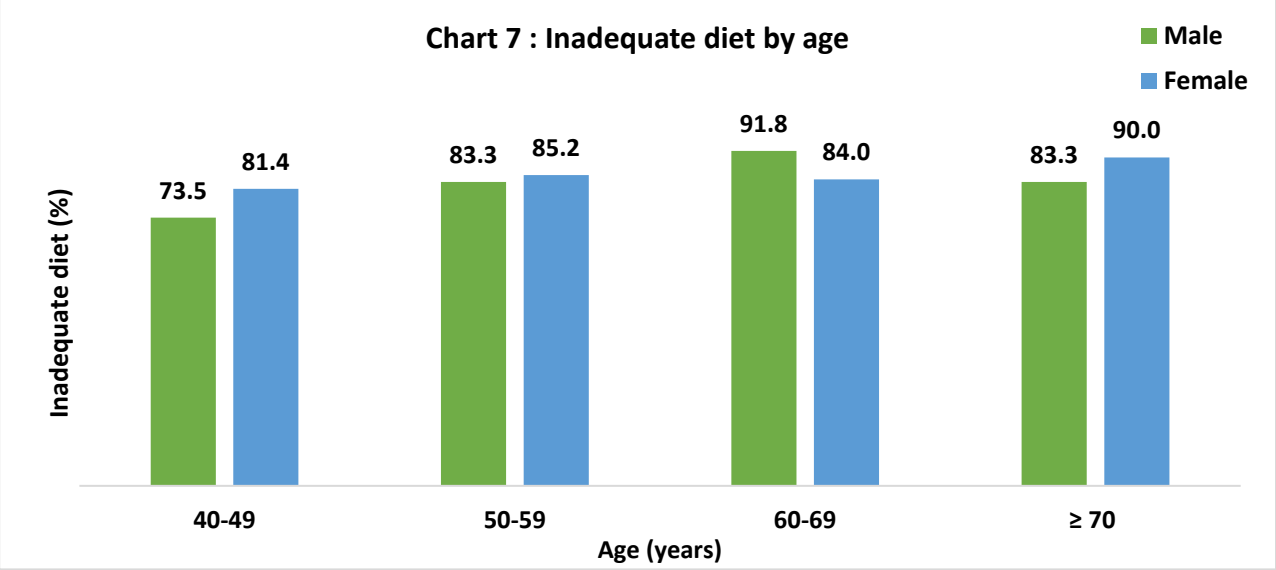
Consumption of fruits and vegetables	Male		Female		Total	
	n	Mean	n	Mean	n	Mean
Mean number of days in a week in which fruits are consumed	171	2.5	452	3.1	623	3.0
Mean number of servings of fruits consumed in a day	172	1.4	454	1.4	626	1.4
Mean number of days in a week in which vegetables are consumed	177	5.7	480	5.8	657	5.8
Mean number of servings of vegetables consumed in a day	177	1.8	479	1.7	656	1.7

3.4.2 Vegetable consumption

Sampled respondents reported consuming vegetables an average of 5.8 times a week. Females reported consuming vegetables an average 5.8 times a week, marginally higher than males (5.7 times a week). Male and female respondents reported consuming an average of 1.8 and 1.7 servings of vegetables per day.

3.4.3 Inadequate dietary practices

Inadequate diet is defined as consuming less than five servings of fruits and vegetables daily. Around 84.4 percent of total respondents reported inadequate diet and both genders had the same percentage (84.4 percent) (Table 3.8).



3.4.3.1 Inadequate diet by age

Male respondents' inadequate diet prevalence increased from 73.5 percent (40-49 years) to 91.8 percent (60-69 years) and then decreased to 83.3 percent among those aged 70 years and above. Similarly, females aged 40-49-years, had the lowest (81.4 percent) and those aged 70 and above had the highest (90.0 percent) inadequate diet rate.

Table 3.8 Inadequate diet by background characteristics

Background Characteristics	Male				Female				Total			
	n	n	%	CI 95%	n	n	%	CI 95%	n	n	%	CI 95%
Age (years)												
40-49	34	25	73.5	55.6-87.1	140	114	81.4	74.0-87.5	174	139	79.9	73.2-85.6
50-59	48	40	83.3	69.8-92.5	162	138	85.2	78.8-90.3	210	178	84.8	79.2-89.3
60-69	61	56	91.8	81.9-97.3	119	100	84.0	76.2-90.1	180	156	86.7	80.8-91.3
≥ 70	36	30	83.3	67.2-93.6	60	54	90.0	79.5-96.2	96	84	87.5	79.2-93.4
Residence												
Urban	57	48	84.2	72.1-92.5	197	170	86.3	80.7-90.8	254	218	85.8	80.9-89.9
Rural	122	103	84.4	76.8-90.4	284	236	83.1	78.2-87.3	406	339	83.5	79.5-87.0
Education												
No formal schooling	33	29	87.9	71.8-96.6	132	109	82.6	75.0-88.6	165	138	83.6	77.1-88.9
Primary	67	56	83.6	72.5-91.5	218	184	84.4	78.9-89.0	285	240	84.2	79.4-88.2
Secondary	51	42	82.4	69.1-91.6	85	72	84.7	75.3-91.6	136	114	83.8	76.5-89.6
High School	19	17	89.5	66.9-98.7	33	29	87.9	71.8-96.6	52	46	88.5	76.6-95.6
College/university	9	7	77.8	40.0-97.2	12	11	91.7	61.5-99.8	21	18	85.7	63.7-97.0
Refused					1	0	0.0		1	0	0.0	
Marital status												
Never married	7	6	85.7	42.1-99.6	20	17	85.0	62.1-96.8	27	23	85.2	66.3-95.8
Currently married	152	127	83.6	76.7-89.1	318	271	85.2	80.8-88.9	470	398	84.7	81.1-87.8
Separated/ Divorced widowed	20	18	90.0	68.3-98.8	141	116	82.3	74.9-88.2	161	134	83.2	76.5-88.6
Refused					2	2	100.0		2	2	100.0	
Occupation												
Employed/ self employed	116	94	81.0	72.7-87.7	221	183	82.8	77.2-87.5	337	277	82.2	77.7-86.1
Unpaid includes homemaker	9	7	77.8	40.0-97.2	155	130	83.9	77.1-89.3	164	137	83.5	77.0-88.9
Unemployed (retired)	54	50	92.6	82.1-97.9	105	93	88.6	80.9-94.0	159	143	89.9	84.2-94.1
Average monthly family Income(kyats)*												
≤90000	16	15	93.8	69.8-99.8	37	33	89.2	74.6-97.0	53	48	90.6	79.3-96.9
90001-150000	40	31	77.5	61.5-89.2	89	70	78.7	68.7-86.6	129	101	78.3	70.2-85.1
15000-250000	21	17	81.0	58.1-94.6	62	54	87.1	76.1-94.3	83	71	85.5	76.1-92.3
250001-400000	29	26	89.7	72.6-97.8	72	60	83.3	72.7-91.1	101	86	85.2	76.7-91.4
≥ 400001	17	13	76.5	50.1-93.2	64	56	87.5	76.8-94.4	81	69	85.2	75.6-92.1
Refused	56	49	87.5	75.9-94.8	157	133	84.7	78.1-90.0	213	182	85.5	80.0-90.0
Total	**179**	**151**	**84.4**	**78.2-89.3**	**481**	**406**	**84.4**	**80.9-7.5**	**660**	**557**	**84.4**	**81.4-87.1**

***Inadequate diet is defined as consuming less than 5 servings of fruits and/or vegetables daily.

3.4.3.2 Inadequate diet by residence

Overall urban respondents reported 85.8 percent inadequate nutrition as compared to 83.5 percent among rural respondents. Differentials in inadequate diet among genders by residence were only marginal.

3.4.3.3 Inadequate diet by education

No pattern of inadequate diet prevalence was observed among males by their educational status. Male respondents having attended college/university reported the lowest (77.8 percent) inadequate diet and those completed high school had the highest (89.5 percent). The percentage of inadequate nutrition among females increased with increase in educational level ranging from 82.6 to 91.7 percent.

3.4.3.4 Inadequate diet by marital status

Around 90.0 percent currently unmarried male respondents reported inadequate dietary practices as compared to 83.6 percent among currently married males. Females reported only marginal differences in inadequate dietary practices based on their marital status.

3.4.3.5 Inadequate diet by occupation

Over four-fifth of the currently employed male respondents (81.0 percent) had inadequate diet as compared to 90.5 percent unpaid and unemployed (combined together). There was only a three-percentage points difference between employed (82.8 percent), and unpaid and unemployed combined (85.8 percent) females.

3.4.3.6 Inadequate diet by income

No clear pattern of inadequate diet based on family income was observed among both genders. Respondents having the least family income among males (93.8 percent) and females (89.2 percent) reported the highest inadequate diet.

3.5. Type of cooking oil used in household

Respondents were enquired about type of oil they generally used in their household for cooking purposes (Table 3.9). A significant, 47.1 percent of respondents reported using peanut oil followed by mixed peanut and palm oil (16.4 percent), palm oil (11.2 percent) and sunflower oil (10.5 percent).

Table 3.9 Type of cooking oil or fat generally used by respondents in their household

Types of oil used in meal preparation#	n	%
Peanut oil	311	47.1
Palm oil	74	11.2
Peanut and palm oil	108	16.4
Soybean oil	59	8.9
Sunflower oil	69	10.5
Prawn oil	1	0.1
Sesame oil	7	1.1
Branded oil (Goody, Meizan, Htyan)	12	1.8
Vegetable oil	17	2.6
None in particular	26	3.8
Don't know	24	3.6
Total (n)	**660**	

Multiple responses possible, total may exceed 100%.

Non communicable diseases

The health status of a population is manifested by the levels of mortality, morbidity, and treatment seeking behaviours of its community members. With the demographic and epidemiological transition in Myanmar, NCDs are now emerging as a major public health problem. This section presents analysis of important NCDs and their risk factors, and health seeking behaviour. Prevalence estimates for diabetes and hypertension are also included.

3.6 Hypertension

Hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney and other diseases. It is a major cause of premature death worldwide, with – over a billion people – having the condition. The burden of hypertension is felt disproportionately in low and middle-income countries, where two thirds of cases are found, largely due to increased risk factors in those populations in recent decades.

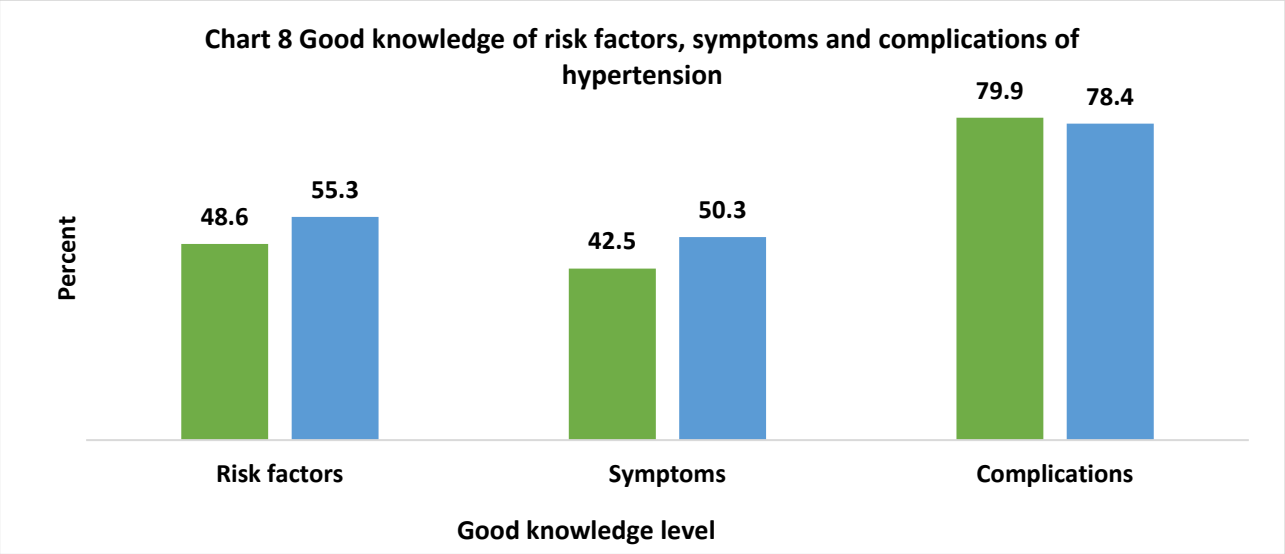
This section includes information on knowledge of hypertension. Respondents were probed for their knowledge of hypertension as a non-communicable disease, range of blood pressure, risk factors, common symptoms, and complications of hypertension

3.6.1 Basic knowledge of hypertension

Respondents were enquired whether hypertension is a communicable disease. Overall, 55.3 percent of respondents correctly stated that hypertension is an NCD.

Slightly less than two-thirds of male respondents (62.7 percent) and 52.2 percent of females correctly reported that hypertension is an NCD.

More than three-fifths of the total respondents (61.1 percent) comprising of 64.8 percent males and 59.7 percent females stated that they were aware of the range of normal blood pressure. Overall, 43.5 percent of respondents, actually had correct knowledge of the range of both normal Systolic blood pressure (120 mmHg) and Diastolic blood pressure (80 mmHg). Slightly higher percent of males (46.9 percent) than females (42.2 percent) had correct knowledge of range of normal blood pressure.



3.6.2 Knowledge of risk factors of hypertension

A total of twelve risk factors of hypertension were considered for this study (Table 3.10). Slightly more than half of the total respondents (53.5 percent) had good knowledge of risk factors, while more than one-third (36.8 percent) had average/moderate knowledge. Female respondents (55.3 percent) had 6.7 percentage points higher good knowledge of risk factors than males.

3.6.3 Knowledge of symptoms of hypertension

A total of ten common symptoms of hypertension were included in the study (Table 3.10). Less than half the total respondents (48.2 percent) had good knowledge of symptoms of hypertension. Females (50.3 percent) had higher good knowledge of symptoms of hypertension than males (42.5 percent).

3.6.4 Knowledge of complications of hypertension

Respondents' knowledge level of complications of hypertension were significantly higher than the knowledge of risk factors and symptoms of hypertension (Table

3.10). More than three-fourth of the respondents (78.8 percent) had good knowledge of complications of hypertension and one-sixth of them of had moderate knowledge. Gender based differences were minimum.

Table 3.10 Knowledge of risk factors, symptoms and complications of hypertension

Hypertension knowledge	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Knowledge of risk factors*									
Good	87	48.6	41.1-56.2	266	55.3	50.7-59.8	353	53.5	49.6-57.3
Average/moderate	79	44.1	36.7-51.7	164	34.1	29.9-38.5	243	36.8	33.1-40.6
Poor/inadequate	12	6.7	3.5-11.4	42	8.7	6.4-11.6	54	8.2	6.2-10.5
No Knowledge	1	0.6	0.0-3.1	9	1.9	0.9-3.5	10	1.5	0.7-2.8
Knowledge of symptoms *									
Good	76	42.5	35.1-50.1	242	50.3	45.7-54.9	318	48.2	44.3-52.1
Average/moderate	79	44.1	36.7-51.7	176	36.6	32.3-41.1	255	38.6	34.9-42.5
Poor/inadequate	23	12.8	8.3-18.7	51	10.6	8.0-13.7	74	11.2	8.9-13.9
No Knowledge	1	0.6	0.0-3.1	12	2.5	1.3-4.3	13	2.0	1.1-3.3
Knowledge of complications *									
Good	143	79.9	73.3-85.5	377	78.4	74.4-82.0	520	78.8	75.5-81.8
Average/moderate	33	18.4	13.0-24.9	80	16.6	13.4-20.3	113	17.1	14.3-20.2
Poor/inadequate	2	1.1	0.1-4.0	18	3.8	2.2-5.8	20	3.0	1.9-4.6
No Knowledge	1	0.6	0.0-3.1	6	1.2	0.5-2.7	7	1.1	0.4-2.2
Awareness that illness can be prevented	144	80.4	73.9-86.0	380	79.0	75.1-82.6	524	79.4	76.1-82.4
Awareness that illness can cause premature death	159	88.8	83.3-93.0	426	88.6	85.4-91.3	585	88.6	86.0-91.0
Total (n)	**179**			**481**			**660**		

***** Percent are column percentages**.**

3.6.5 Other awareness of hypertension

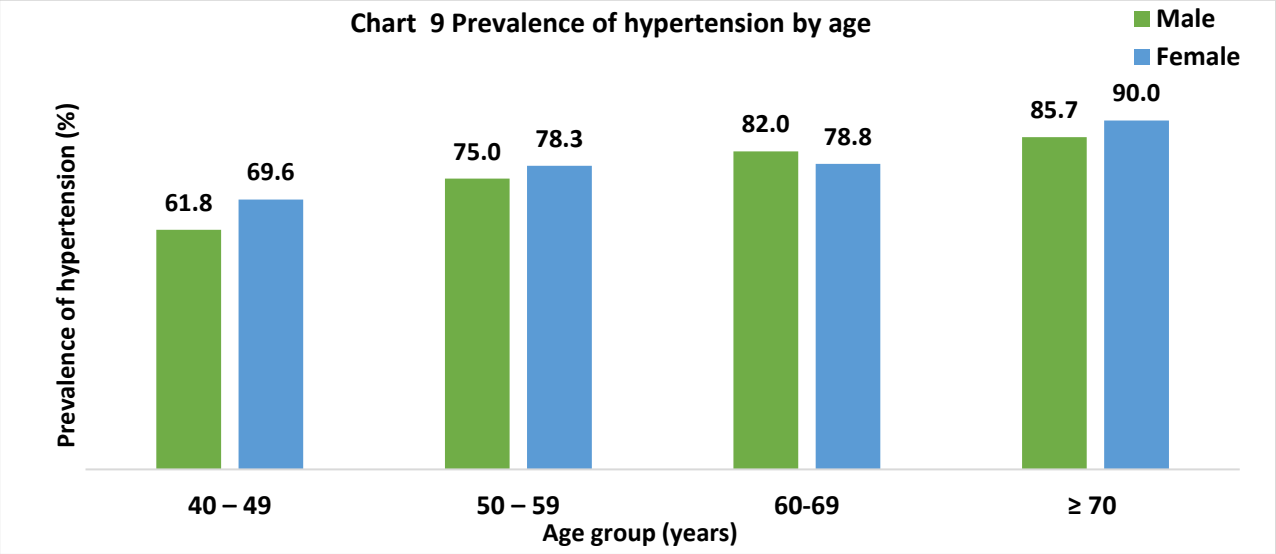
Around four-fifths of all respondents were aware that hypertension was preventable and there were marginal differentials based on gender. As high as 88.6 percent of study participants were aware that hypertension can cause premature death, with no gender-based differences.

3.7. Hypertension prevalence by background characteristics

Blood pressure of all study respondents was measured. All hypertension cases were analysed on the basis of respondent's gender and background characteristics i.e. age, residence, education, marital status, occupation, and household income (Table 3.11). Overall, more than three-fourths respondents (77.3 percent) had raised blood pressure, with females (77.4 percent) having marginally higher prevalence than males (77.0 percent).

3.7.1 Hypertension prevalence by age

Prevalence of hypertension among both males and females increased with increase in age. Respondents aged 40-49 years had a raised blood pressure prevalence of 68.0 percent while those aged 70 years and above had a prevalence of 88.4 percent.



3.7.2 Hypertension prevalence by residence

Urban respondents had a hypertension prevalence of 82.5 percent as compared to 74.0 percent among rural respondents. Urban male respondents had 13.3 percentage points higher hypertension prevalence than their rural counterparts. This difference was 6.8 percentage points among female respondents.

3.7.3 Hypertension prevalence by education

Differences in hypertension prevalence were observed among both males and females however, no clear pattern emerged. Hypertension prevalence among respondents were as follows; having no schooling (81.2 percent), high school (71.2 percent), and college/ university (85.7 percent) educated respondents.

3.7.4 Hypertension prevalence by marital status

Slightly less than three-fourth of currently married persons (74.3 percent) were found to be hypertensive as compared to 83.0 percent among persons currently unmarried. Remarkably all currently unmarried males had raised blood pressure as compared to 73.0 percent among currently married males. Hypertension prevalence was highest among never married females (90.0 percent).

Table 3.11 Prevalence of hypertension by background characteristics

Background Characteristics	Hypertension #											
	n	Male			n	Female			n	Total		
Age (years)		**n**	**%**	**CI 95%**		**n**	**%**	**CI 95%**		**n**	**%**	**CI 95%**
40 – 49	34	21	61.8	43.6-77.8	138	96	69.6	61.2-77.1	172	117	68.0	60.5-74.9
50 – 59	48	36	75.0	60.4-86.4	161	126	78.3	71.1-84.4	209	162	77.5	71.2-83.0
60-69	61	50	82.0	70.0-90.6	118	93	78.8	70.3-85.8	179	143	79.9	73.3-85.5
≥ 70	35	30	85.7	69.7-95.2	60	54	90.0	79.5-96.2	95	84	88.4	80.2-94.1
Residence												
Urban	57	49	86.0	74.2-93.7	194	158	81.4	75.2-86.7	251	207	82.5	77.2-87.0
Rural	121	88	72.7	63.9-80.4	283	211	74.6	69.1-79.5	404	299	74.0	69.4-78.2
Education												
No formal schooling	33	25	75.8	57.7-88.9	132	109	82.6	75.0-88.6	165	134	81.2	74.4-86.9
Primary	66	50	75.8	63.6-85.5	216	168	77.8	71.6-83.1	282	218	77.3	72.0-82.1
Secondary	51	41	80.4	66.9-90.2	83	57	68.7	57.6-78.4	134	98	73.1	64.8-80.4
High School	19	12	63.2	38.4-83.7	33	25	75.8	57.7-88.9	52	37	71.2	56.9-82.9
College/ University	9	9	100.0		12	9	75.0	42.8-94.5	21	18	85.7	63.7-97.0
Refused					1	1	100.0		1	1	100.0	
Marital Status												
Never married	7	7	100.0		20	18	90.0	68.3-98.8	27	25	92.6	75.7-99.1
Currently married	152	111	73.0	65.2-79.9	315	236	74.9	69.8-79.6	467	347	74.3	70.1-78.2
Separated/ divorced widowed	19	19	100.0		140	113	80.7	73.2-86.9	159	132	83.0	76.3-88.5
Refused					2	2	100.0		2	2	100.0	
Occupation												
Employed/ self employed	116	83	71.6	62.4-79.5	220	159	72.3	65.9-78.1	336	242	72.0	66.9-76.8
Unpaid includes homemaker	9	7	77.8	40.0-97.2	152	121	79.6	72.3-85.7	161	128	79.5	72.4-85.5
Unemployed (retired)	53	47	88.7	77.0-95.7	105	89	84.8	76.4-91.0	158	136	86.1	79.7-91.1
Average monthly family income (kyats)												
≤90000	16	10	62.5	35.4-84.8	37	30	81.1	64.8-92.0	53	40	75.5	61.7-86.2
90001-150000	40	30	75.0	58.8-87.3	87	72	82.8	73.2-90.0	127	102	80.3	72.3-86.8
150001-250000	21	19	90.5	69.6-98.8	62	43	69.4	56.3-80.4	83	62	74.7	64.0-83.6
250001-400000	29	19	65.5	45.7-82.1	71	49	69.0	56.9-79.5	100	68	68.0	57.9-77.0
≥ 400001	17	12	70.6	44.0-89.7	64	42	65.6	52.7-77.1	81	54	66.7	55.3-76.8
Refused	55	47	85.5	73.3-95.5	156	133	85.3	78.7-90.4	211	180	85.3	79.8-89.8
Total	**178**	**137**	**77.0**	**70.1-82.9**	**477**	**369**	**77.4**	**73.3-81.0**	**655**	**506**	**77.3**	**73.8-80.4**

#Includes persons having been prescribed any medication to control their hypertension and/or measurement of systolic pressure>=130 mmHg and/or diastolic pressure>=80 mmHg

3.7.5 Hypertension prevalence by occupation

Less than three-fourth of respondents that were currently employed had hypertension which is considerably lower than the prevalence among unpaid (79.5 percent) and unemployed (86.1 percent) respondents. Gender based differentials

of hypertension prevalence by type of occupation were marked with unemployed respondents having the highest prevalence.

3.7.6 Hypertension prevalence by income

No definite patterns of hypertension prevalence among males and females by household income emerge. Marked difference in prevalence rates were found between income groups among and also between genders. Overall hypertension prevalence decreased from the second lowest income group (80.3 percent) to the highest income group. (66.7 percent).

3.8. Health Status of persons with hypertension

3.8.1 General health status

Less than one-fourth of persons (23.3 percent) with hypertension reported good general health. More than one-fourth male respondents (28.5 percent) with raised blood pressure reported having good general health status which was higher than that of females (21.4 percent) (Table 3.12).

Table 3.12 Health status among persons with hypertension

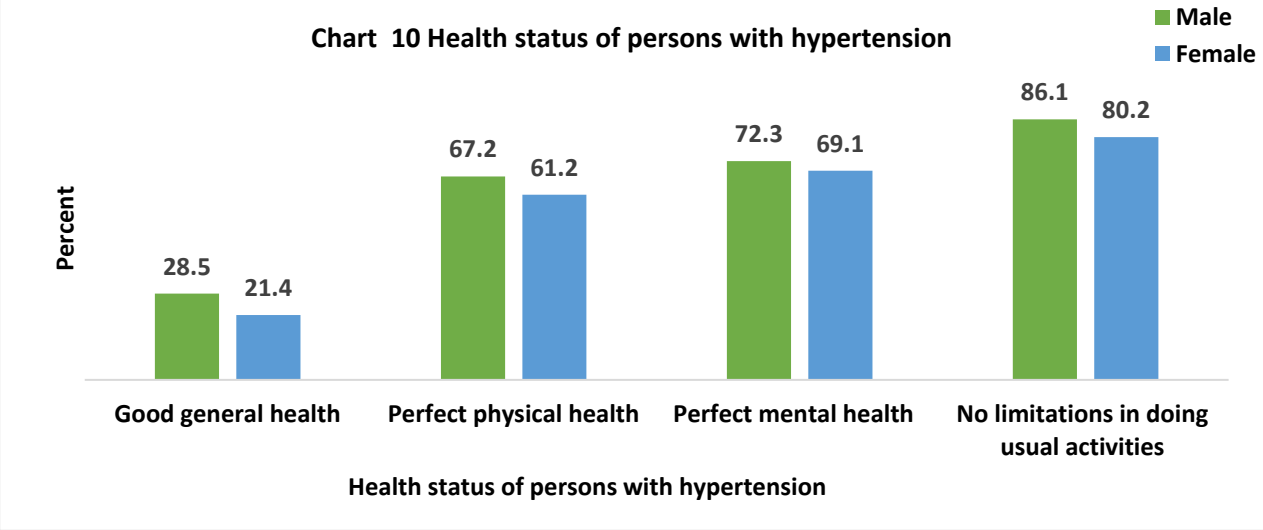
General Status	Hypertension*								
	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Reported good health (general health)	39	28.5	21.1-36.8	79	21.4	17.3-26.0	118	23.3	19.7-27.3
Reported perfect physical health during the past 30 days	92	67.2	58.6-74.9	226	61.2	56.1-66.2	318	62.9	58.5-67.1
Reported perfect mental health during the past 30 days	99	72.3	64.0-79.6	255	69.1	64.1-73.8	354	70.0	65.8-73.9
Reported no limitations in doing usual activities during past 30 days	118	86.1	79.2-91.4	296	80.2	75.8-84.2	414	81.8	78.2-85.1
Total (n)	**137**			**369**			**506**		

*Includes persons having been prescribed any medication to control their hypertension and/or measurement of systolic pressure>=130 mmHg and/or diastolic pressure>=80 mmHg

3.8.2 Physical health status

In respect to physical health condition which includes physical illness and injury, slightly more than three-fifths of hypertensive persons (62.9 percent) reported

perfect health during the past 30 days. Male persons reported a 6 percentage points higher rate of perfect physical health than females.



3.8.3 Mental Health status

All hypertensive cases were asked about their mental health condition (including stress, depression, and emotional problems) during the past 30 days. Exactly 70.0 percent of eligible respondents reported perfect mental health over the past 30 days. About 72.3 percent of male respondents reported a marginally higher percentage of perfect mental health than 69.1 percent among females.

3.8.4 Limitations in usual daily activities

More than four-fifths of hypertensive cases (81.8 percent) reported facing no limitations in performing their usual activities during the past 30 days. While 86.1 percent males reported no limitations in undertaking their usual activities and 80.2 percent females reported the same.

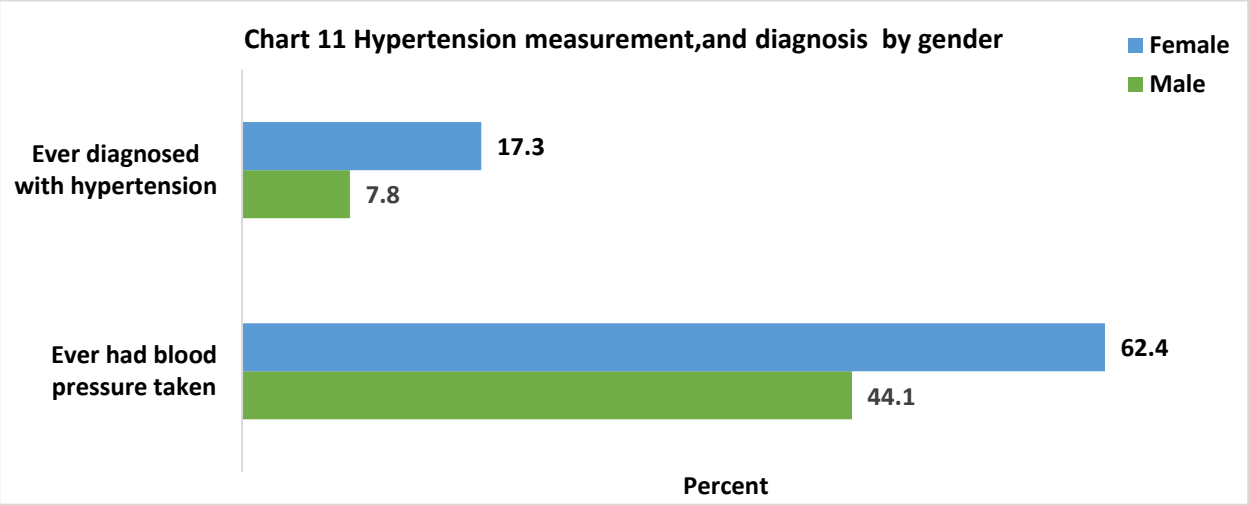
3.9 Hypertension related health services

3.9.1 Hypertension measurement and diagnosis

As high as 91.8 percent of respondents stated that they ever had their blood pressure measured (Table 3.13). Around 93.8 percent of female respondents had their blood pressure measured as compared to 86.6 percent males. More two-fifth of respondents (44.9 percent) reported being diagnosed with raised blood pressure. Slightly less than half the female respondents (47.2 percent) were diagnosed with hypertension as compared to 38.6 percent males.

3.9.2 Treatment for Hypertension

Over nine-tenths of persons (90.2 percent) diagnosed with raised blood pressure were prescribed medicines (Table 3.13), with females having a 2.4 percentage points higher rate than males. Less than three-fifths of patients (59.1 percent) diagnosed with hypertension reported taking hypertensive medicines regularly. Females reported a 5.3 percentage points higher drug adherence rate than males.



3.9.3 Source of consultancy

The health staff consulted for hypertension included nurse (61.1 percent), others (19.3 percent), and midwife (7.4 percent). Differentials of type of provider by gender were only marginal. More than half the respondents (54.7 percent) mentioned General Practitioner (GP) as their health facility where they received consultation followed by sub-centre (22.1 percent) and government hospital (10.1 percent). Differences in the source of consultancy by gender were not marked.

3.9.4 Average time taken to reach facility

An average of 22.2 minutes was spent by respondents in travelling from their home to reach the health facility for availing consultancy for hypertension. Female respondents spent an average of 23.3 minutes travelling which was higher than time spent by males (18.6 minutes).

3.9.5 Type of travelling difficulties

Only 9.1 percent of respondents reported travelling difficulties while seeking treatment for hypertension. Females (9.9 percent) reported slightly higher difficulties than males (6.3 percent). The main difficulties included financial and transportation problems.

Table 3.13 Treatment seeking behaviours for persons with hypertension

Treatment seeking behaviours	Male			Female			Total		
	n	**%**	**CI 95%**	**n**	**%**	**CI 95%**	**n**	**%**	**CI 95%**
Ever had blood pressure taken	155	86.6	80.7-91.2	451	93.8	91.2-95.8	606	91.8	89.5-93.8
Ever been diagnosed with hypertension	69	38.6	31.4-46.1	227	47.2	42.7-51.8	296	44.9	41.0-48.7
Total (n)	**179**			**481**			**660**		
If diagnosed with hypertension prescribed medicine	61	88.4	78.4-94.9	206	90.8	86.2-94.2	267	90.2	86.2-93.3
If diagnosed with hypertension, taking medicine regularly	38	55.1	42.6-67.1	137	60.4	53.7-66.8	175	59.1	53.3-64.8
Health staff consulted for hypertension									
Doctor	5	7.3	2.4-16.1	15	6.6	3.7-10.7	20	6.8	4.2-10.2
Nurse	40	58.0	45.5-69.8	141	62.1	55.5-68.4	181	61.1	55.3-66.7
Midwife	7	10.1	4.2-19.8	15	6.6	3.7-10.7	22	7.4	4.7-11.0
Other	12	17.4	9.3-28.4	45	19.8	14.8-25.6	57	19.3	14.9-24.2
None	5	7.3	2.4-16.1	11	4.9	2.4-8.5	16	5.4	3.1-8.6
Total (n*)	**69**			**227**			**296**		
Place of consultation **									
Government hospital	4	6.3	1.7-15.2	24	11.3	7.4-16.4	28	10.1	6.8-14.3
GP	36	56.3	43.3-68.6	115	54.3	47.3-61.1	151	54.7	48.6-60.7
Rural Health Centre	3	4.7	1.0-13.1	14	6.6	3.7-10.8	17	6.2	3.6-9.7
Sub-centre	15	23.4	13.8-35.7	46	21.7	16.3-27.9	61	22.1	17.3-27.5
Other	6	9.4	3.5-19.3	13	6.1	3.3-10.3	19	6.9	4.2-10.5
Total (n)	**64**			**212**			**276**		
Average time taken to travel to seek treatment **	18.6		14.0-23.2	23.3		17.3-29.2	22.2		17.4-26.9
Travelling difficulties faced to reach treatment location	4	6.3	1.7-15.2	21	9.9	6.2-14.7	25	9.1	5.9-13.1
Total (n)	**64**			**212**			**276**		
Types of difficulties									
Financial difficulty	2	50.0	6.8-93.2	6	28.6	11.3-52.2	8	32.0	14.9-53.5
Transportation difficulty	1	25.0	0.6-80.6	8	38.1	18.1-61.6	9	36.0	18.0-57.5
No one to accompany	0	0.0		5	23.8	8.2-47.2	5	20.0	6.8-40.7
Other	1	25.0	0.6-80.6	5	23.8	8.2-47.2	6	24.0	9.4-45.1
Total (n)	**4**			**21**			**25**		

* Includes persons diagnosed with hypertension
** Includes respondents that mentioned place of consultation
$ Includes persons that reported travelling difficulties to reach treatment location.

3.10 Blood pressure measurement

Mean systolic blood pressure increased with increase in respondents age. Individuals in the youngest (40-49 years) age group had a mean systolic rate of

128 mmHg while that of the oldest age group had a systolic rate of 146 mmHg. No marked differences in diastolic pressure across age groups were observed.

Table 3.14 Average systolic and diastolic blood pressure measures

Background Characteristics	Male		Female		Total	
	Systolic (mmHg)	Diastolic (mmHg)	Systolic (mmHg)	Diastolic (mmHg)	Systolic (mmHg)	Diastolic (mmHg)
Age (years)						
40-49	130	87	127	86	128	86
50-59	137	90	134	87	135	87
60-69	143	90	140	85	141	87
≥ 70	144	84	147	85	146	84
Residence						
Urban	141	90	135	86	136	87
Rural	138	87	136	86	137	86
Schooling						
No formal schooling	142	87	139	85	139	85
Primary	139	89	136	87	136	87
Secondary	139	88	133	85	135	86
High School	135	86	130	85	132	85
College/university	144	94	131	86	136	90
Refused			128	89	128	89
Marital status						
Never married	146	96	141	90	142	91
Currently married	138	88	134	86	135	87
Separated/divorced widowed	145	89	138	84	139	85
Refused			116	82	116	82
Occupation						
Employed/self-employ	136	87	133	86	134	87
Unpaid including homemaker	142	89	137	86	137	86
Unemployed (retired)	146	89	139	85	141	86
Total (n)	**177**		**475**		**652**	
Average monthly family income (kyats)						
≤90000	133	84	137	87	136	86
90001-150000	139	88	139	90	139	89
150001-250000	141	89	129	84	132	86
250001-400000	134	90	133	85	133	86
≥ 400001	134	88	128	84	129	85
Refused	145	88	139	85	141	86
Mean (mmHg)	*139*	*88*	*135*	*86*	*136*	*86*
Total (n)	**177**		**475**		**652**	

Only marginal differentials in both systolic and diastolic blood pressure by their place of residence were recorded. The mean systolic blood pressure among females

decreased with increase in schooling level. Mean diastolic blood pressure among females did not display marked differentials by levels of schooling.

Currently married male respondents had lower average (138 mmHg) systolic and diastolic readings (88 mmHg) than never married and separated/divorced respondents. No clear pattern of diastolic readings by marital status emerged among females.

Currently employed male respondents had lower average systolic (136 mmHg) and diastolic (87 mmHg) readings than unpaid and unemployed male respondents. Only marginal differentials in average diastolic readings across both genders by type of occupation emerged.

There were differences in both systolic and diastolic readings based on income levels however no definite patterns emerged. Respondents belonging to the second lowest income group had the highest readings (systolic-139 mmHg and dystolic-89 mmHg) while those having the highest income levels had the lowest blood pressure readings (systolic-129 mmHg and dystolic-85 mmHg).

3.11 Diabetes Mellitus

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which over time may lead to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. The most common type of diabetes is type 2 diabetes or Diabetes Mellitus, usually found in adults, which occurs when the body becomes resistant to insulin or does not make enough insulin. Diabetes Mellitus is caused as a result of excess body weight and physical inactivity.

Over the past three decades the prevalence of type 2 diabetes has risen dramatically. Based on WHO data, globally over 422 million people have diabetes, particularly in low-and middle-income countries, and 1.6 million deaths are directly attributed to diabetes each year (WHO, 2018).

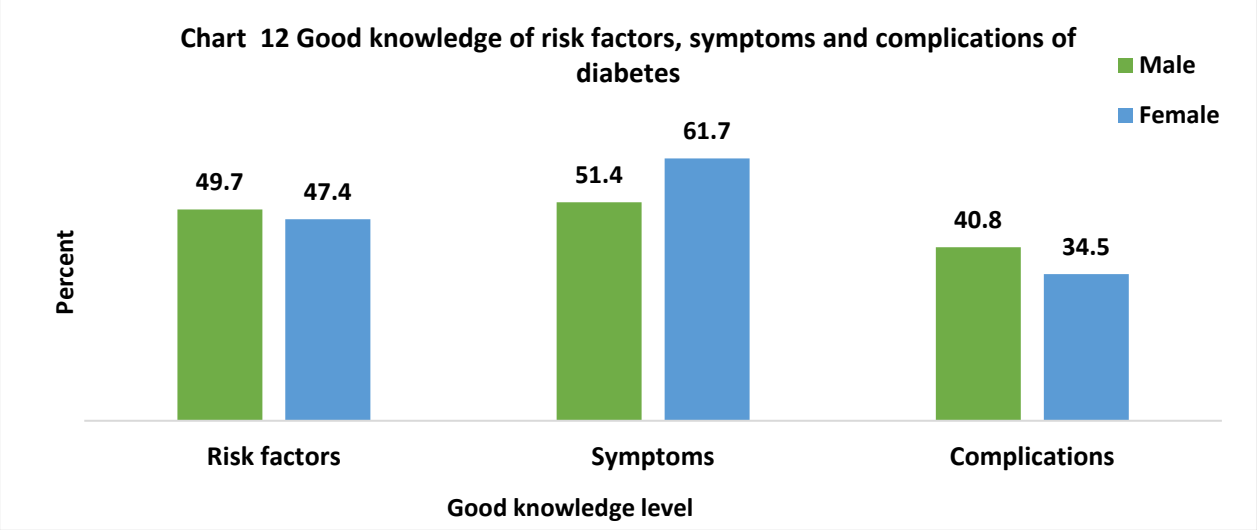
3.11.1 Basic knowledge of diabetes

All study participants were probed whether diabetes is related to high blood glucose level. More than three fourths respondents (78.0 percent), consisting of 79.3 percent males and 77.5 percent females had correct knowledge. Around one-fifth of respondents did not know the correct response.

Respondents were enquired whether diabetes is a chronic disease. Overall, 86.1 percent of respondents correctly reported that diabetes is a chronic disease Around 89.9 percent of male respondents and 84.6 percent of females had correct knowledge.

3.11.2 Knowledge of risk factors of diabetes

Six risk factors of diabetes were included in this study. Respondents were initially asked about the risk factors, and then followed up by prompting for answers. Slightly less than half of the sampled respondents (48.0 percent) had good knowledge of risk factors of diabetes followed by more than one-third (35.0 percent) having average/moderate knowledge (Table 15). Only marginal differentials in knowledge levels of risk factors of diabetes by gender were noted.



3.11.3 Knowledge of symptoms of diabetes

As many as eight symptoms of diabetes were incorporated in the study tool. Marginally less than three-fifth of the total respondents (58.9 percent) had good knowledge of symptoms of diabetes. Female respondents (61.7 percent) had significantly higher good knowledge level than males (51.4 percent).

3.11.4 Knowledge of complications of diabetes

Knowledge levels of complications of diabetes were significantly lower than the knowledge of risk factors and symptoms of diabetes. Around 36.2 percent of the interviewed respondents had good knowledge of complications of diabetes while 48.5 percent had moderate knowledge. Good knowledge of complications were 6.3 percentage points higher among male respondents.

3.11.5 Other awareness of diabetes

Around three-fourths of the interviewed respondents (74.4 percent) were aware that diabetes is preventable, and male respondents had marginally higher awareness levels. More than four-fifths of respondents (82.3 percent) were aware

that diabetes can cause premature death, with females having marginally higher knowledge than males.

Table 3.15 Knowledge of risk factors, symptoms and complications of diabetes

Knowledge Level	Diabetes								
	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Knowledge of risk factors									
Good	89	49.7	42.2-57.3	228	47.4	42.9-52.0	317	48.0	44.2-51.9
Average/moderate	62	34.6	27.7-42.1	169	35.1	30.9-39.6	231	35.0	31.4-38.8
Poor/inadequate	18	10.1	6.1-15.4	53	11.0	8.4-14.2	71	10.8	8.5-13.4
No Knowledge	10	5.6	2.7-10.0	31	6.4	4.4-9.0	41	6.2	4.5-8.3
Knowledge of symptoms									
Good	92	51.4	43.8-58.9	297	61.7	57.2-66.1	389	58.9	55.1-62.7
Average/moderate	53	29.6	23.0-36.9	108	22.5	18.8-26.4	161	24.4	21.2-27.9
Poor/inadequate	13	7.3	3.9-12.1	21	4.4	2.7-6.6	34	5.2	3.6-7.1
No Knowledge	21	11.7	7.4-17.4	55	11.4	8.7-14.6	76	11.5	9.2-14.2
Knowledge of complications									
Good	73	40.8	33.5-48.4	166	34.5	30.3-38.9	239	36.2	32.5-40.0
Average/moderate	81	45.3	37.8-52.8	239	49.7	45.1-54.3	320	48.5	44.6-52.4
Poor/inadequate	23	12.8	8.3-18.7	67	13.9	11.0-17.3	90	13.6	11.1-16.5
No Knowledge	2	1.1	0.1-4.0	9	1.9	0.9-3.5	11	1.7	0.8-3.0
Awareness that diabetes can be prevented	137	76.5	69.6-82.5	354	73.6	69.4-77.5	491	74.4	70.9-77.7
Awareness that diabetes can cause premature death	144	80.4	73.9–86.0	399	83.0	79.3-86.2	543	82.3	79.1-85.1
Total n	**179**			**481**			**660**		

3.12 Diabetes prevalence by background characteristics

Individuals classified as a diabetic case were analysed on the basis of their background characteristics. The overall prevalence of diabetes was 16.8 percent. The raised blood sugar prevalence among females was 19.9 percent which was twice that of male respondents (8.5 percent).

3.12.1 Diabetes prevalence by age

Overall, no definite pattern of diabetes prevalence by age emerged (Table 3.16). Respondents aged between 40-49 years had the lowest (14.2 percent) prevalence of raised blood sugar while those in the age group 50-59 had the highest (19.3 percent). Diabetes prevalence among males increased with increase in age. Females had a higher prevalence of diabetes than males for each and every age group, however the differences reduced with increase in age.

Table 3.16 Prevalence of diabetes by background characteristics

Background characteristics	Diabetes #											
	Male				Female				Total			
Age (years)	**n**	**n**	**%**	**CI 95%**	**n**	**n**	**%**	**CI 95%**	**n**	**n**	**%**	**CI 95%**
40 – 49	33	0	0.0		136	24	17.7	11.6-25.1	169	24	14.2	9.3-20.4
50-59	47	4	8.5	2.4-20.4	160	36	22.5	16.3-29.8	207	40	19.3	14.2-25.4
60-69	61	6	9.8	3.7-20.2	117	25	21.4	14.3-29.9	178	31	17.4	12.2-23.8
≥ 70	35	5	14.3	4.8-30.3	59	9	15.3	7.2-27.0	94	14	14.9	8.4-23.7
Residence												
Urban	55	11	20.0	10.4-33.0	191	64	33.5	26.9-40.7	246	75	30.5	24.8-36.7
Rural	121	4	3.3	0.9-8.2	281	30	10.7	7.3-14.9	402	34	8.5	5.9-11.6
Education												
No formal schooling	33	2	6.1	0.7-20.2	131	13	9.9	5.4-16.4	164	15	9.2	5.2-14.6
Primary	65	2	3.1	0.4-10.7	213	48	22.5	17.1-28.7	278	50	18.0	13.7-23.0
Secondary	51	7	13.7	5.7-26.3	83	26	31.3	21.6-42.4	134	33	24.6	17.6-32.8
High School	18	2	11.1	1.4-34.7	33	5	15.2	5.1-31.9	51	7	13.7	5.7-26.3
College/university	9	2	22.2	2.8-60.0	12	2	16.7	2.1-48.4	21	4	19.1	5.4-41.9
Marital Status												
Never married	7	0	0.0		20	3	15.0	3.2-37.9	27	3	11.1	2.4-29.2
Currently married	150	13	8.7	4.7-14.4	312	76	24.4	19.7-29.5	462	89	19.3	15.8-23.2
Separated/ divorced widowed	19	2	10.5	1.3-33.1	138	15	10.9	6.2-17.3	157	17	10.8	6.4-16.8
Refused					2	0	0.0		2	0	0.0	
Occupation												
Employed/self employed	114	3	2.6	0.5-7.5	217	30	13.8	9.5-19.1	331	33	10.0	7.0-13.7
Unpaid including homemaker	9	0	0.0		152	44	29.0	21.9-36.8	161	44	27.3	20.6-34.9
Unemployed (retired)	53	12	22.6	12.3-36.2	103	20	19.4	12.3-28.4	156	32	20.5	14.5-27.7
Average monthly family income (kyats)												
≤90000	16	0	0.0		37	4	10.8	3.0-25.4	53	4	7.6	2.1-18.2
90001-150000	39	3	7.7	1.6-20.9	85	13	15.3	8.4-24.7	124	16	12.9	7.6-20.1
150001-250000	20	1	5.0	0.1-24.9	62	11	17.7	9.2-29.5	82	12	14.6	7.8-24.2
250001-400000	29	2	6.9	0.8-22.8	72	17	23.6	14.4-35.1	101	19	18.8	11.7-27.8
≥ 400001	17	1	5.9	0.1-28.7	63	14	22.2	12.7-34.5	80	15	18.8	10.9-29.0
Refused	56	8	14.3	6.4-26.2	153	35	22.9	16.5-30.4	208	43	20.7	15.4-26.8
Total	**176**	**15**	**8.5**	**4.8-13.7**	**472**	**94**	**19.9**	**16.4-23.8**	**648**	**109**	**16.8**	**14.0-19.9**

Random blood sugar level equal to or greater 200 mg/dl, HbA1c level of 6.5% or higher or individuals currently taking antidiabetic medication.

3.12.2 Diabetes prevalence by residence

Urban respondents had a prevalence of 30.5 percent as compared to 8.5 percent among rural respondents. Urban male respondents had a prevalence of 20.0 percent, which is 6 times greater than their rural counterparts (3.3 percent). Urban

female (33.5 percent) respondents had a diabetes prevalence of 22.8 percentage points higher than of rural respondents (10.7 percent).

3.12.3 Diabetes prevalence by education

Around one-fourth (24.6 percent) of respondents with secondary education were diabetic which was significantly higher than that of respondents with other educational levels. No clear pattern of diabetes prevalence among both the genders based on education level emerged, however the differences were marked. While females with having completed secondary level (31.3 percent) had the highest diabetes prevalence, and among male respondents having college/ university level education had the highest prevalence (22.2 percent).

3.12.4 Diabetes prevalence by marital status

Slightly less than one-fifth of currently married persons (19.3 percent) were diabetic as compared to 10.8 percent among currently unmarried individuals. The differences in diabetes prevalence among males by marital status were not marked. Currently married females (24.4 percent) were more than two times more likely to be diabetic as compared to currently unmarried females (10.9 percent). Diabetes prevalence among currently married females (24.4 percent) was almost three times more than currently married males (8.7 percent).

3.12.5 Diabetes by occupation

Persons that were unemployed or unpaid (24.0 percent) had two times higher diabetic prevalence than currently employed (10.0 percent). Diabetes prevalence among currently employed females (13.8 percent) was much lower than unemployed and unpaid females (25.1 percent). Prevalence rate among unemployed males was 22.6 percent and much higher than employed males (2.6 percent).

3.12.6 Diabetes by income

Overall, diabetes prevalence increased with increase in income. Respondents belonging to the lowest income group had a prevalence of 7.6 percent, while those belonging to the highest income group had a prevalence of 18.8 percent. Marked difference in prevalence rates were found between income groups in both the genders. Among female's diabetes prevalence increased from the lowest income level (10.8 percent) to the fourth highest income group (23.6 percent). Difference in diabetes prevalence between the genders increased significantly with the rise in income.

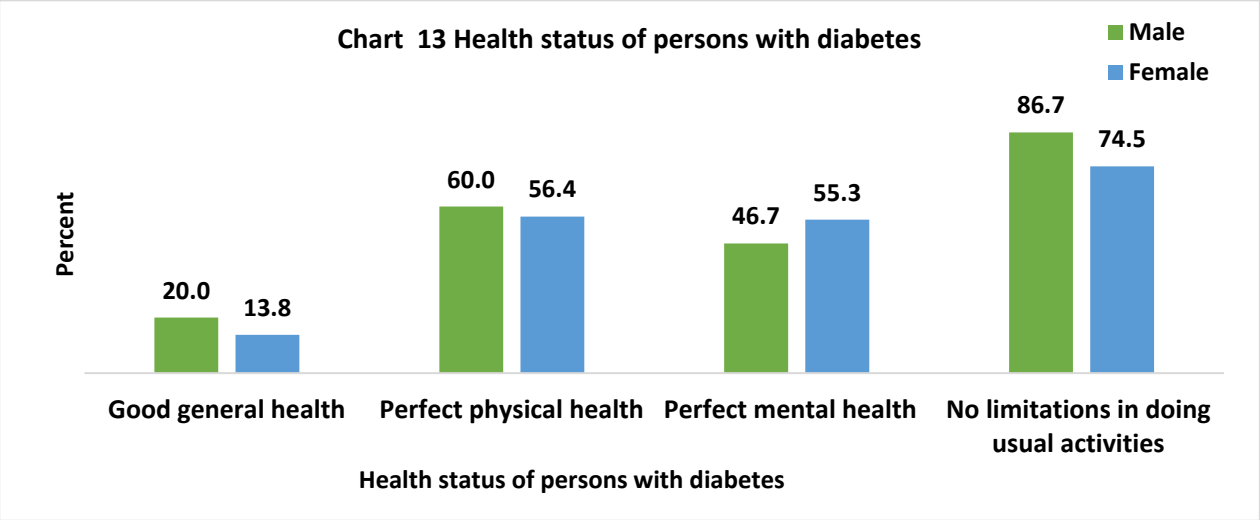
3.13. Health Status of persons with diabetes

3.13.1 General health status

Less than one-seventh of study participants (14.7 percent) with diabetes reported good general health (Table 3.17). Male respondents (20.0 percent) reported higher levels of good health status than that of females (13.8 percent).

3.13.2 Physical health status

Perfect physical health condition among diabetic persons during the past 30 days was reported by 56.9 percent respondents. Male diabetic persons reported marginally (3.6 percentage points) higher levels of perfect physical health than females.



3.13.3 Mental health status

Mental health condition during the past 30 days was analysed for diabetic persons. More than half the respondents (54.1 percent) reported perfect mental health over the past 30 days. Around 55.3 percent of diabetic females reported having perfect mental health which was higher than diabetic males (46.7 percent).

3.13.4 Limitations in usual daily activities

More than three-fourths of diabetic persons (76.1 percent) report no limitation in doing their usual activities during the past 30 days. While 86.7 percent males reported no limitation in doing their usual activities, which was considerably higher (12.2 percentage points) than the female figure of 74.5 percent.

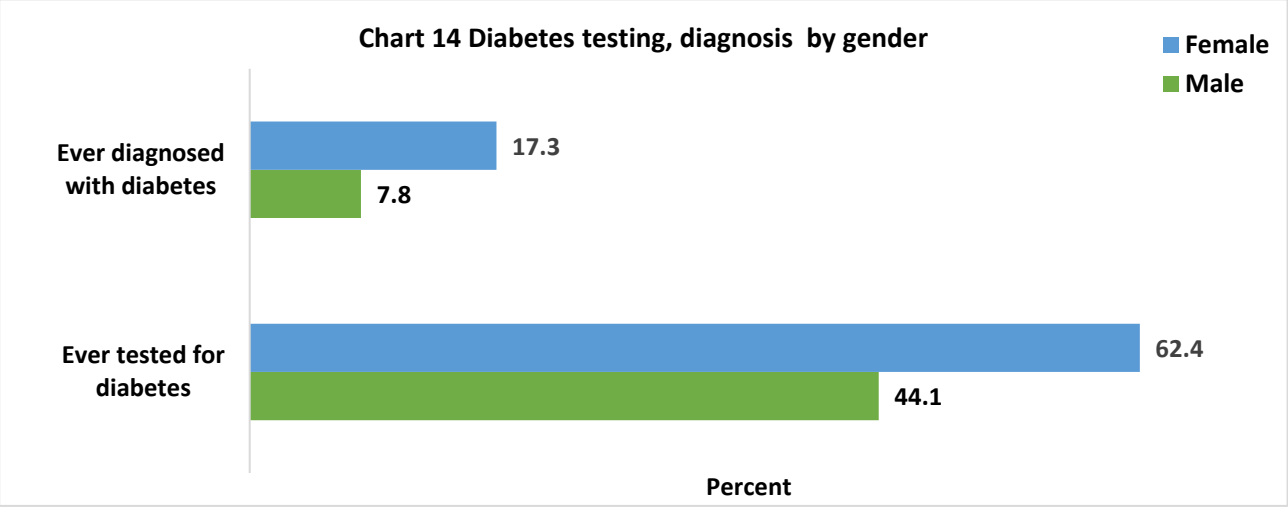
Table 3.17 Health status among persons with diabetes

General Status	Diabetes								
	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Reported good health (general health)	3	20.0	4.3-48.1	13	13.8	7.6-22.5	16	14.7	8.6-22.7
Reported perfect physical health during the past 30 days	9	60.0	32.3-83.7	53	56.4	45.8-66.6	62	56.9	47.0-66.3
Reported perfect mental health during the past 30 days	7	46.7	21.3-73.4	52	55.3	44.7-65.6	59	54.1	44.3-63.7
Reported no limitations in doing usual activities during past 30 days	13	86.7	59.5-98.3	70	74.5	64.4-82.9	83	76.1	67.0-83.8
Total (n)	**15**			**94**			**109**		

3.14 Diabetes related health services

3.14.1 Diabetes testing and diagnosis

Slightly less than three-fifth of respondents (57.4 percent) cited that they had been (ever) tested for diabetes (Table 18). Females reported 18.3 percentage points higher value for diabetes testing than males. Less than one-seventh of persons (14.7 percent) reported being diagnosed with diabetes. Females (17.3 percent) had twice the prevalence of diabetes than males (7.8 percent).



3.14.2 Treatment for diabetes

As high as 95.9 percent of persons that had been diagnosed with diabetes were prescribed diabetic medicines. This figure was marginally (3.5 percentage points) higher among females than males. More than four-fifth of diagnosed persons (81.4

persons) were taking diabetic medicines regularly. Females reported a 3.3 percentage points higher drug adherence rate than males.

Table 3.18 Treatment seeking behaviours for persons with diabetes

Treatment seeking behaviours	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Ever tested for diabetes	79	44.1	36.7-51.7	300	62.4	57.9-66.7	379	57.4	53.6-61.2
Ever been diagnosed with diabetes	14	7.8	4.3-12.8	83	17.3	14.0-20.9	97	14.7	12.1-17.6
Total (n)	**179**			**481**			**660**		
If diagnosed with diabetes prescribed medicine	13	92.9	66.1-99.8	80	96.4	89.8-99.2	93	95.9	89.8-98.9
If diagnosed with diabetes, taking medicine regularly	11	78.6	49.2-95.3	68	81.9	72.0-89.5	79	81.4	72.3-88.6
Health staff consulted for diabetes *									
Doctor	1	7.1	0.2-33.9	3	3.6	0.8-10.2	4	4.1	1.1-10.2
Nurse	10	71.4	41.9-91.6	62	74.7	64.0-83.6	72	74.2	64.3-82.6
Midwife	2	14.3	1.8-42.8	5	6.0	2.0-13.5	7	7.2	3.0-14.3
Other	1	7.1	0.2-33.9	9	10.8	5.1-19.6	10	10.3	5.1-18.1
None	0	0.0		4	4.8	1.3-11.9	4	4.1	1.1-10.2
Total (n)	**14**			**83**			**97**		
Place of consultation **									
Government hospital	2	15.4	1.9-45.4	7	8.8	3.6-17.2	9	9.6	4.5-17.6
GP	8	61.5	31.6-86.1	49	61.2	49.7-71.9	57	61.3	50.6-71.2
RHC	1	7.7	0.2-36.0	6	7.5	2.8-15.6	7	7.5	3.1-14.9
Sub-centre	2	15.4	1.9-45.4	8	10.0	4.4-18.8	10	10.8	5.3-18.9
Other	0			10	12.5	6.2-21.8	10	10.8	5.3-18.9
Total (n)	**13**			**80**			**93**		
Average time to travel to seek treatment	10.7		8.1-13.2	35.0		20.7-49.2	31.7		19.2-44.2
Travelling difficulties faced to reach treatment location	1	7.7	0.2-36.0	13	16.3	8.9-26.2	14	15.1	8.5-24.0
Types of difficulties $ #									
Financial difficulty	0			7	53.8	25.1-80.8	7	50.0	23.0-77.0
Transportation difficulty	0			5	38.5	13.9-68.4	5	35.7	12.8-64.9
No one to accompany	0			1	7.7	0.2-36.0	1	7.1	0.2-33.9
Other	1	100.0		3	23.1	5.0-53.8	4	28.6	8.4-58.1
Total (n)	**1**			**13**			**14**		

*Includes persons diagnosed with diabetes **Includes persons that availed consultancy for diabetes

$ Includes persons that faced travelling difficulties # Multiple responses possible, total may exceed 100%.

3.14.3 Source of consultancy

The main health staff consulted for diabetes included nurse (74.2 percent), other (10.3 percent) and midwife (7.2 percent). Slightly more than three-fifth of persons with diabetes (61.3 percent) mentioned GP as the place of receiving consultation followed by sub centre (10.8 percent) and others (10.8 percent). Gender based differences of the source of consultancy were not marked except for govt. hospitals and others.

3.14.4 Average time taken to reach facility

Respondents that sought consultancy services for diabetes spent an average of 31.7 minutes to travel from their home to reach the health facility. Female respondents spent an average of 35.0 minutes travelling which is three times more than that of males (10.7 minutes).

3.14.5 Type of travelling difficulties

Overall, 15.1 percent of respondents reported travelling difficulties while seeking treatment for diabetes. Females (16.3 percent) were two times more likely to face difficulties than males (7.7 percent). The main travelling difficulties included financial and transportation.

3.15 Blood glucose

3.15.1 Random Blood Sugar (RBS)

A random blood sugar test checks an individual's blood glucose at a random time of the day. Having a random blood sugar range of 200mg/dl or more is a clear indication of the presence of diabetes mellitus. The mean RBS of female respondents (144.9 mg/dl) was significantly higher than that of males (131.8 md/dl).

No clear pattern of RBS (mg/dl) by age emerged. Marked differences were found in the RBS levels across different age groups. Males in the age group 60-69 years had the highest average RBS (mg/dl) of 142.2 mg/dl as compared to highest average of 148.2 mg/dl among females in the age group 50-59 years.

The average urban RBS was 161.6 mg/dl much higher than the rural average of 129.1 mg/dl. Urban and rural differentials, of mean RBS differences among males (30.4 mg/dl) and females (32.5 mg/dl) were very significant.

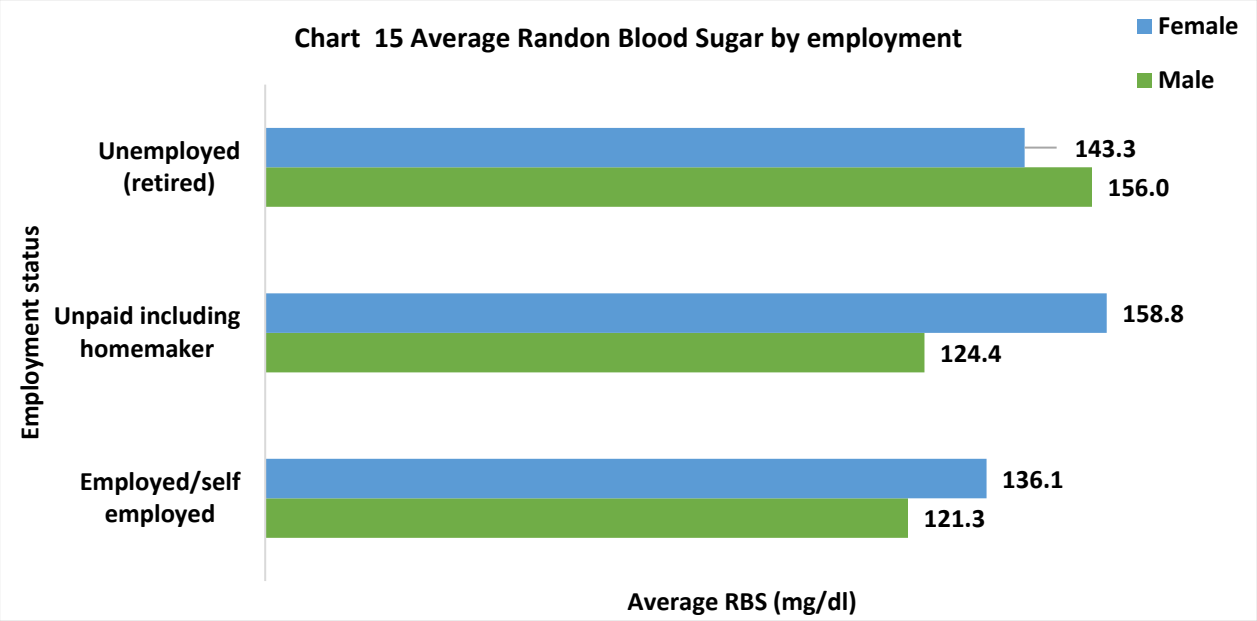
No definite pattern of mean RBS by education level emerged among both genders. Among both males and females, the highest RBS levels were reported from

secondary level respondents (145.9 mg/dl and 162.2 mg/dl) and lowest RBS levels among persons with no formal schooling (117.7 mg/dl and 129.5 mg/dl)

Table 3.19 Average random blood sugar (md/dl) and HbA1c (%)

Background characteristics	Male			Female			Total		
	RBS		HbA1c	RBS		HbA1c	RBS		HbA1c
	mg/dl	mmol/l	%	mg/dl	mmol/l	%	mg/dl	mmol/l	%
Age (years)									
40 – 49	123.4	6.9	3.2	143.3	8.0	9.4	139.4	7.7	8.9
50– 59	135.9	7.6	9.4	148.2	8.2	7.9	145.4	8.1	8.1
60 – 69	142.2	7.9	7.4	143.3	8.0	9.0	142.9	7.9	8.4
≥ 70	115.5	6.4	6.8	143.2	8.0	7.6	133.0	7.4	7.4
Residence									
Urban	152.8	8.5	6.3	164.2	9.1	8.0	161.6	9.0	7.7
Rural	122.4	6.8	8.4	132.0	7.3	9.7	129.1	7.2	9.4
Education									
No formal schooling	117.7	6.5	9.6	129.5	7.2	9.0	127.1	7.1	9.1
Primary	127.8	7.1	8.5	149.1	8.3	9.3	144.1	8.0	9.2
Secondary	145.9	8.1	6.2	162.2	9.0	7.0	156.0	8.7	6.8
High School	124.5	6.9	-	138.5	7.7	9.6	133.6	7.4	9.6
College/university	148.1	8.2	6.4	140.3	7.8	9.0	143.6	8.0	7.3
Marital status									
Never married	121.1	6.7		121.4	6.7	8.3	121.3	6.7	8.3
Currently married	131.4	7.3	7.7	151.1	8.4	8.5	144.7	8.0	8.4
Separated/divorced widowed	138.6	7.7	4.3	134.9	7.5	9.0	135.4	7.5	8.2
Refused				102.0	5.7		102.0	5.7	
Occupation									
Employed/self employed	121.3	6.7	7.5	136.1	7.6	9.0	131.0	7.3	8.8
Unpaid including homemaker	124.4	6.9	5.4	158.8	8.8	8.2	156.8	8.7	8.1
Unemployed(retired)	156.0	8.7	7.4	143.3	8.0	8.8	147.6	8.2	8.1
Total (n)	**175**		**17**	**470**		**64**	**645**		**81**
Average monthly family income (kyats)									
≤90000	114.6	6.4		138.4	7.7	9.3	131.2	7.3	9.3
90001-150000	136.3	7.6	8.1	139.5	7.8	10.4	138.5	7.7	9.7
150001-250000	120.0	6.7	6.4	140.4	7.8	8.1	135.4	7.5	7.9
250001-400000	122.3	6.8	9.3	137.4	7.6	7.4	133.0	7.4	7.6
≥ 400001	139.6	7.8	7.0	149.2	8.3	6.8	147.1	8.2	6.9
Refused	140.6	7.8	6.9	153.0	8.5	9.4	149.8	8.3	8.7
Mean	131.8	7.3	7.3	144.9	8.1	8.6	141.4	7.9	8.3
n	**175**		**17**	**470**		**64**	**645**		**81**

Currently married females had the highest RBS of 151.1 mg/dl significantly higher than never married and unmarried females. Separated/divorced/ widowed males had the highest average (138.6 mg/dl) RBS levels among males.



No clear trends of RBS levels by income emerged among both the genders. Marked differences in mean RBS readings among male respondents were noted ranging from 114.6 mg/dl (lowest income) and 139.6 mg/dl (highest income). Average RBS among females was similar for all income groups except that of the highest income.

3.15.2 Glycated haemoglobin (HbA1c)

Glycated haemoglobin is haemoglobin with glucose attached. The HbA1c test evaluates the average amount of glucose in the blood over the last 2 to 3 months by measuring the percentage of glycated haemoglobin in the blood. In the present study only those participants having RBS ≥ 200 mg/dl had their HbA1c measured.

No clear pattern of HbA1c (%) by age appeared among both the genders. Females belonging to the youngest age group, 40-49 years, and male respondents aged 50-59 years had the highest average HbA1c (9.4 percent) reading.

Differences between average HbA1c by residence among both the genders were recorded. Both rural males and females had higher average HbA1c than their urban counterparts.

Overall, no pattern of HbA1c by education emerged among both the genders. Except for females with secondary education all other females had mean HbA1c

(%) ≥ 9.0 percent. Currently unmarried females had mean HbA1c of 9.0 percent, which is more than twice that of their male counterparts (4.3 percent).

Unpaid persons had lower mean HbA1c readings than employed and unemployed persons among both genders. Male respondents had lower average HbA1c reading than females for each type of occupation.

No pattern of mean HbA1c by average monthly family income across both genders emerged. Females belonging to the second lowest income had the highest average HbA1c of 10.4 percent while those with the highest income had the lowest value of 6.8 percent. Average HbA1c readings among females decreased with increase of income after the first quintile.

3.16 Inclusive Self-Help Groups (ISHGs)

ISHGs in Myanmar represent a community-driven development initiative to enable older persons to meet their own needs and improve not only their own well-being but also of their communities. The core values that govern the ISHGs are that they are multifunctional, intergenerational, participatory, membership & community driven, inclusive and integrated & collective.

The criteria for memberships to ISHGs includes having at least 70 percent of members aged above 60 years, up to 30 percent of member aged below 60 years, at least 50 percent women members, and inclusion of people with disabilities and other vulnerable groups. The three key thematic areas where ISHGs aim at making a meaningful contribution are health & care, income (livelihoods) and social welfare & protection. ISHGs provide an excellent opportunity to tackle the trifecta of ageing-related challenges through a holistic approach to older persons' wellbeing.

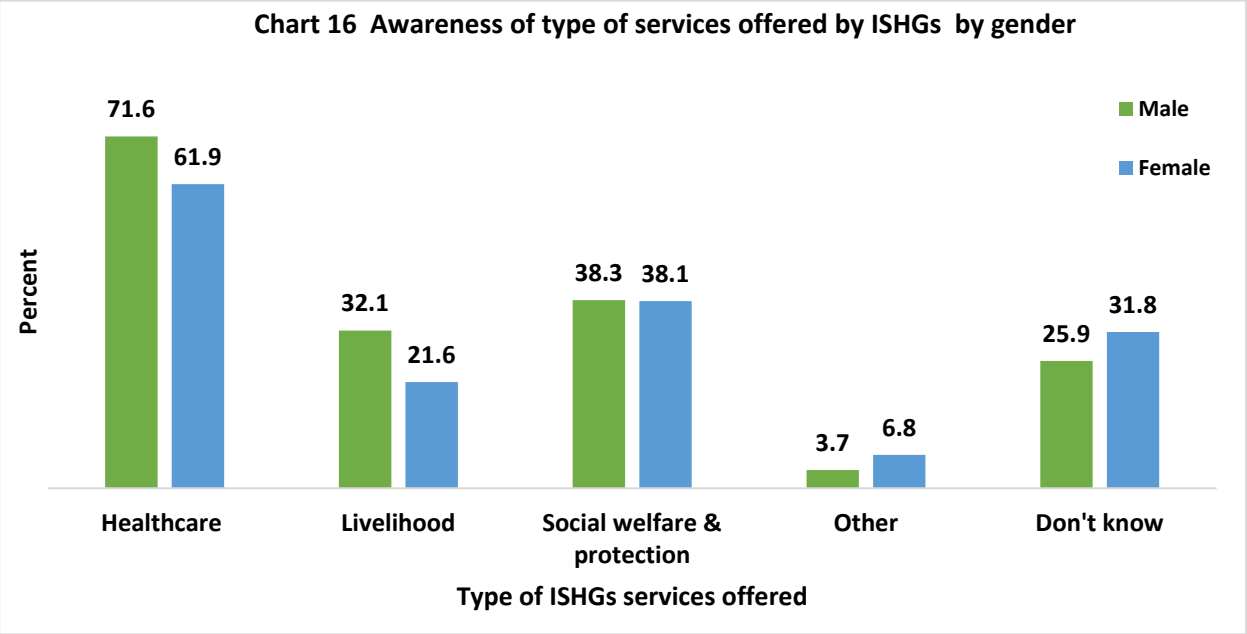
3.16.1 Awareness of ISHGs

Persons living in areas where ISHGs are operational where probed whether they were aware of ISHGs (Table 3.20). More than three-fourth (77.9 percent) of respondents responded that they had heard about ISHGs. Male respondents (80.2 percent) reported slightly higher awareness of ISHGs than females (76.9 percent).

The qualitative study confirmed these findings; most of the community members recognized the existence of ISHGs. However, in some area's community members were not aware about ISHGs because information about group establishment had not been provided to the entire community.

3.16.2 Awareness of type of ISHGs services

Respondents were probed for type of services being provided by ISHGs. Around two-thirds (65.0 percent) of the respondents were aware that ISHGs provided health care services, followed by social welfare and protection (38.1 percent) and livelihood (24.9 percent) services. A significant proportion of 30.0 percent were



not aware of any type of services being offered by ISHGs. Male respondents reported higher awareness of health care services (9.7 percentage points) and livelihood (10.5 percentage points) than females.

Table 3.20 Awareness of ISHGs and their services

Awareness of ISHGs	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Ever heard of ISHGs*	81	80.2	71.1-87.5	176	76.9	70.8-82.2	257	77.9	73.0-82.2
Total (n)		**101**			**229**			**330**	
Awareness on type of services provided by ISHGs # **									
Healthcare	58	71.6	60.5-81.1	109	61.9	54.3-69.1	167	65.0	58.8-70.8
Livelihood	26	32.1	22.2-43.4	38	21.6	15.8-28.4	64	24.9	19.7-30.7
Social welfare & protection	31	38.3	27.7-49.7	67	38.1	30.9-45.7	98	38.1	32.2-44.4
Other	3	3.7	0.8-10.4	12	6.8	3.6-11.6	15	5.8	3.3-9.4
Don't know	21	25.9	16.8-36.9	56	31.8	25.0-39.2	77	30.0	24.4-36.0
Total (n)		**81**			**176**			**257**	

*Calculated from respondents residing in areas where ISHGs are operational

*Calculated from respondents residing in ISHG operational areas and those who were aware of ISHGs

Multiple responses possible, total may exceed 100%.

During the FGDs, most community members stated that ISHGs were established for improving welfare of the elderly by supporting group members, both financially and socially. Beyond financial and support services, many respondents mentioned that they were aware of health services, such as health education sessions, and health check-ups;

> *"They give support and care to the elderly. Regular check-ups are being provided mainly for group members of ISHGs; sometimes for community. If necessary, they provide check-ups at home."*

However, some community members were not clear about ISHGs and the services provided by them.

3.16. 3 Uptake of ISHGs services

More than one-third (37.6 percent) of respondents located in ISHGs areas reported receiving services from ISHGs with no differences based on gender.

During discussions with community members stated the different types of services were rendered by ISHGs. Nearly all the participants mentioned different services that were provided and stated that health services, were given only to ISHG members. A few mentioned that they also gave health services to non-ISHG members who needed their help.

3.16. 4 Type of ISHGs services received

All eligible respondents were probed about type of services received from ISHGs. Around 36.1 percent of persons reported receiving health care services, followed by social welfare and protection (10.6 percent) and livelihood (5.8 percent). Only marginal differentials in type of services availed from ISHGs by gender were found.

Respondents during FGDs stated the different forms of financial support provided to the elderly by ISHGs, such as money for childbirth and medical treatment and condolence money for funerals. Financial support was given for other necessary items for older persons such as eye glasses, walking aids, and wheelchairs.

In addition to these, ISHGs provided support to some of the ISHG member's family, such as students who were experiencing financial hardship. Livelihood funds were also provided as ISHG services to improve the livelihoods of members and sustain regular and reliable incomes. Low-interest loans were also provided to ISHG members.

> *"ISHGs offer pension for the elderly. They also donate rice monthly. Lastly, they also give condolence money for funerals"*

In order to provide such financial support, ISHG regularly organized fund-raising activities such as selling snacks and grocery, and by collecting the interest on loans provided to members.

Table 3.21 Types of ISHG services availed by respondents

ISHG services	Male			Female			Total		
	n	%	CI 95%	n	%	CI 95%	n	%	CI 95%
Ever received services from ISHGs	38	37.6	28.2-47.8	86	37.6	31.3-44.2	124	37.6	32.3-43.0
Types of services received from ISHGs #									
Healthcare services	38	37.6	28.2-47.8	81	35.4	29.2-41.9	119	36.1	30.9-41.5
Livelihood	6	5.9	2.2-12.5	13	5.7	3.1-9.5	19	5.8	3.5-8.8
Social welfare and protection	8	7.9	3.5-15.0	27	11.8	7.9-16.7	35	10.6	7.5-14.4
Other	0	0		9	3.9	1.8-7.3	9	2.7	1.3-5.1
Ever received screening preventive services from ISHG members	38	37.6	28.2-47.8	83	36.2	30.0-42.8	121	36.7	31.5-42.1
Types of screening/preventive services received from ISHGs * #									
Blood pressure check-up	37	36.6	27.3-46.8	83	36.2	30.0-42.8	120	36.4	31.2-41.8
Random blood sugar test	11	10.9	5.6-18.7	28	12.2	8.3-17.2	39	11.8	8.5-15.8
Attending health awareness services	7	6.9	2.8-13.8	14	6.1	3.4-10.0	21	6.4	4.0-9.6
Other	12	11.9	6.3-19.8	21	9.2	5.8-13.7	33	10.0	7.0-13.8
Total (n)	**101**			**229**			**330**		

* Calculated from respondents residing in areas where ISHGs are operational

\# Multiple responses possible, total may exceed 100%.

3.16.5 Type of screening/ preventive services provided by ISHGs

Study participants were asked whether they had received screening or preventive health services from ISHGs. Less than two-fifths (36.7 percent) of respondents reported ever receiving screening or preventive services. The common screening/preventive services received included blood pressure check-ups (36.4 percent), random blood sugar tests (11.8 percent) and health awareness services (6.4 percent). Only marginal differentials in type of services received from ISHGs based on gender were reported.

During FGDs respondents were found to be aware of screening services such as measuring weight, blood pressure and blood glucose level. This was mainly in Yangon Region, were such services had been initiated recently. Respondents also stated that ISHGs kept records of the screenings for referring to health centres, if further investigations and treatment were needed. Further, in some areas, respondents mentioned that health education sessions were conducted in order to

improve health awareness, aiming at improving health status. Lastly, the FGDs informed that ISHGs provided home care for older adults to support activities such as daily living, such as bathing, dressing, and eating;

> *"Regarding health care, we give home health care for some elderly who suffered stroke."*

3.16.6 Perception of ISHGs and services provided

Members stated that were overall satisfied with the services provided by ISHGs and felt that being part of such a group contributed to their well-being. Most respondents had gained health knowledge due to trainings and health sessions related to hypertension and diabetes mellitus.

> *"Trainers demonstrates how to measure blood pressure and blood glucose level, how to identify the diseases and how to adjust treatment given."*

Some ISHG members reported in the discussions that they felt a sense of security because of the groups they were part of. In addition to this, social bonding, unity and team spirit were other advantages that were gained from being an ISHG member.

3.16.7 Perceived community challenges for ISHG to function

Certain challenges were mentioned by ISHG members; limited funding being the most important challenge. Low recognition of ISHGs and their services, especially among wealthier communities, constituted another challenge in performing activities. In addition to that, respondents identified that ISHG volunteers were not always trusted by community members, as they are not official health professionals.

> *"Community knows that the ISHG volunteers are not health professionals. Instead, they just get some trainings, and this constitutes challenges in building trust. Trust is usually acquired over time."*

Beyond lack of funding and trust, limited health knowledge among certain community limited the demand for screening services.

> *"Certain community members don't have good health knowledge. They say that they are healthy, and they don't need to do check-ups. They even refuse to see us."*

Lastly, a few ISHG members stated that not providing any medicines was also one of the challenges, as some communities had asked whether they would provide medicines or not. If not, these communities responded that the services were not useful to them, as the distribution of medicine is what they needed the most.

3.16.8 Suggestions from the community to improve ISHGs activities

A wide range of suggestions emerged from the FGDs. The community members proposed that all services should be provided, not only to the ISHG members, but to the entire community. Some community members suggested that raising awareness on ISHGs, by announcing the establishment of the group, and promoting activities and services delivered by ISHGs, would be useful.

Both community and ISHG members suggested that it would be better if more active and younger persons could engage in ISHG activities;

> *"It will be better if more youth are involved in ISHG activities. We, the elderly, are not active enough to attend and plan all meetings and activities. Joint work could be useful."*

In order to be more confident in providing health services, ISHG members suggested additional trainings on hypertension and diabetes for volunteers. Some ISHG members also thought that coordination with township health department was necessary for gaining community trust and for providing better healthcare to the community.

> *"In terms of undertaking check-ups and other health activities, it will be more appropriate if doctors are involved."*

Lastly, some ISHG members emphasized that more funding was crucial in order to perform more effectively, and scale-up of activities and services provided.

> *"If ISHGs had more funding, they could improve their support not only to ISHG members but also raise their reach to the entire community."*

Chapter 4

Conclusion and Recommendations

This chapter summarises findings from the baseline study exploring people's understanding of prevention and management of hypertension, diabetes mellitus, and health related activities of ISHGs. This study was undertaken in three regions of Myanmar for developing an effective community level scale-up strategy to tackle NCDs. A total sample of 660 respondents consisting of 179 males and 481 females were interviewed for the baseline study.

Key findings of the respondent's background information, lifestyle, knowledge, history, and treatment of hypertension and diabetes mellitus are included below. Information on knowledge and utilization of services provided by ISHGs is also incorporated. Based on the study findings certain recommendations have also been made.

4.1 Background information

- The male respondents (59.9 years) had a slightly higher mean age than that of females (56.6 years).
- Overall, male respondents had a higher education level than females. However, more than one-fourth (27.5 percent) of females and less than one-fifth (18.4 percent) of males had no formal schooling.
- More than four-fifths (84.9 percent) of males were currently married, which was considerably higher than 66.1 percent among females.
- Slightly less than two-thirds (64.8 percent) of male respondents were currently employed or self-employed as compared to 46.0 percent among female respondents.

4.2 Lifestyle

4.2.1 Tobacco smoking

- More than one third (37.4 percent) of male persons were currently smoking tobacco products which is almost two and half times higher than that of females (15.2 percent).
- Among current smokers the proportion of male (89.6 percent) and female respondents (86.3 percent) that smoked on a daily basis was very high.
- Cigars, cheroots and Cigarillo were the most common type of tobacco product smoked by male (77.6 percent) and female (84.9 percent) respondents.
- Current use of smokeless tobacco products among males (50.8 percent) respondents was significantly higher than females (34.5 percent). Use of betel quid was universal among all smokeless tobacco product users.

4.2.2 Alcohol consumption

- Over one fourth (26.3 percent) of male respondents and only 1.0 percent female respondents reported having ever consumed alcohol.
- As high as 83.0 percent of males (that had ever consumed alcohol) reported consuming alcohol within past 30 days and two out of the 5 females reported the same.

4.3 Active lifestyle

4.3.1 Physical activity

- Less than one-fifth (19.6 percent) of male and 22.3 percent of female respondents reported undertaking no physical exercise.
- More than two-fifth (42.2 percent) of the respondent reported physical inactivity, comprising 44.7 percent among female and 36.3 percent among male respondents.

4.3.2 Healthy eating

- The mean number of days in a week and number of servings in a day, that fruits and vegetables are consumed did not reveal significant differences based on gender.
- Around 84.4 percent of both male and female respondents reported inadequate diet of fruits and vegetables.

4.4 Hypertension and Diabetes Mellitus

4.4.1 Hypertension

- Less than two-thirds (62.7 percent) of male respondents and 52.2 percent of females had correct knowledge that hypertension is an NCD.
- Female respondents had a 6.7 percentage points higher level of good knowledge of the risk factors and 7.8 percentage points higher level of good knowledge of symptoms of hypertension than male respondents
- Good knowledge of complications of hypertension among both genders was significantly higher than knowledge of risk factors, and symptoms respectively.
- The prevalence of hypertension among both male and female respondents was 77 percent. Hypertension prevalence increased with increase in age among both genders.
- More than a quarter of males (28.5 percent) with raised blood pressure mentioned having good general health status which was higher than that of females (21.4 percent).
- While 93.8 percent female reported having their blood pressure measured (ever) which is higher than that of males (86.6 percent).

- Less than two-fourth of males (38.6 percent) and 47.2 percent females reported having being ever diagnosed with hypertension.
- Nine out ten persons diagnosed with raised blood pressure were prescribed medicines, and around three-fifth reported, were taking the prescribed drugs. No marked differences based on gender were noted.
- The most common health staff consulted for hypertension was nurse and the most commonly visited place for consultation was GP.

4.4.2 Diabetes Mellitus

- Slightly less than four-fifth of respondents had correct knowledge that diabetes was related to high blood glucose level, and 86.1 percent of them were aware that it is a chronic disease.
- Less than half the total respondents had good knowledge of risk factors of diabetes, while three-fifth had good knowledge of symptoms of diabetes. However good knowledge of complications of diabetes among all respondents was only 36.2 percent.
- The prevalence of diabetes among females was 19.9 percent, which is more than twice that of males (8.5 percent). Urban respondents had three times higher diabetes prevalence than rural respondents. Diabetes prevalence was six times higher among urban as compared to rural males.
- Only 14.7 percent of diabetic patients reported good health, while three-fourth reported no limitation in doing their usual activities during the past thirty days.
- Less than three-fifths (57.4 percent) of respondents reported being ever tested for diabetes and female respondents reported 18.3 percentage points higher testing rate.
- Around 14.7 percent of total respondents had been ever diagnosed with diabetes with females (17.3 percent) reporting more than twice the rate of males (7.8 percent).
- Over 95 percent of respondents diagnosed with diabetes were prescribed with medicines and four-fifth of diagnosed persons were regularly taking medicines. Gender based difference were only marginal.
- The most frequently consulted health worker for diabetes was the nurse and the most visited place for consultation was GP.

4.5 Inclusive Self-Help Groups

- Over three-fourth (77.9 percent) of respondents were aware of ISHGs, there were only marginal differences based on gender. The main type of services offered by ISHGs mentioned by respondents were health care (65.0 percent), social welfare and protection (38.1 percent), and livelihood (24.9 percent) services.

- Less than two-fifth (37.6 percent) of respondents located in ISHGs areas reported receiving services from ISHGs. Around 36.1 percent of respondents received health care services, followed by social welfare and protection (10.6 percent) and livelihood (5.8 percent) services.

4.6 Recommendations

- Findings on tobacco, alcohol usage, knowledge, prevalence, and treatment practices of hypertension and diabetes can be used as a benchmark for monitoring community-based interventions on NCDs.
- As a significant proportion of males were currently smoking, there is immediate need to strengthen Tobacco control programs. Further, there is a need to reduce, and ultimately eliminate, the use of all tobacco products through universal support of the Framework Convention on Tobacco Control.
- Initiation of smoking during adolescent age is a matter of public health concern. Community based activities to raise public awareness on harmful effects of smoking needs to be introduced into school health program.
- The use of betel quid was significantly high among respondents and strategic efforts to raise community awareness about the harmful effects and legislative efforts to ban its use is required.
- Use of alcohol among males was high. Immediate efforts for reducing the number of young person's consuming alcohol need to be undertaken with the help of BCC and government regulation.
- Finding from the study showed low proportion of persons undertaking sufficient physical activity or exercise as well as adequate intake of fruits and vegetables and fruits. There is urgent need to develop individual exercise and dietary plans for persons based on their age, physical condition, BMI and disease history.
- Developing training modules for outreach workers and community members on lifestyle behaviours including tobacco smoking, alcohol consumption, physical activity and nutritional diet is crucial in order to transfer key messages to communities.
- Specific modules for health workers on risk factors, symptoms, complications, diagnosis, prevention and treatment for hypertension and diabetes need to be developed to transfer simple health education messages to communities.
- Screening for common NCDs at the grass roots level should be included as part of the primary health care system. Diagnosis and treatment facilities at the primary health care system will ensure early diagnosis, treatment, and prevention of complications.
- Health policy strategy should be elaborated to create political will and it should commit to raising community awareness, prevention, diagnosis and treatment for

common NCDs as part of its core. There need to be a paradigm shift from communicable diseases to NCDs.

- A very significant proportion of the respondents had not completed education even up to high school level. Adult learning techniques need to be adapted to local conditions, for instance with community awareness raising strategies using pictorial charts, skits, and local folk theatre.
- Appropriate Behaviour Communication Change (BCC) material on specific topics related to tobacco and alcohol cessation, and hypertension and diabetes prevention and treatment need to be developed and made available at the community level.
- In areas where ISHGs are functional, community need to be made aware of their presence and of the types of services that are offered.
- Lastly, for reducing the burden of NCDs – from prevention to early diagnosis, and management –synergies between community and primary health care (PHC) levels need to be promoted for conducting health related activities effectively in community groups and further linking to available services PHC level.

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