PeKa
B40

PROTECTHEALTH

PeKa B40
REPORT
2019-2020

TABLE OF CONTENTS

FROM THE CEO 08
LIST OF TABLES 10
LIST OF FIGURES 12
ABBREVIATIONS 13
AT A GLANCE 14
EXECUTIVE SUMMARY 16

CHAPTER 1 BACKGROUND 18

CHAPTER 2 METHODOLOGY 20
2.1 Data source and data management 20
2.2 Variables definitions 20
2.3 Statistical method 21

CHAPTER 3 SOCIO-DEMOGRAPHIC 22
3.1 Introduction 22
3.2 Socio-demographic background of BSH beneficiaries 22
3.3 Socio-demographic background of PeKa B40 beneficiaries 24
3.4 Summary 25

CHAPTER 4 BENEFIT 1 - HEALTH SCREENING (HS) 26
4.1 Introduction 26
4.2 Trend of health screening (HS) 26
4.3 Medical history 27
4.4 Physical examination 29
4.4.1 General examination 29
4.4.2 Digital rectal examination (DRE) 29
4.5 Clinical breast examination (CBE) 31
4.6 Diagnosis 32
4.7 Referral 33
4.8 Risk factors 33
4.9 Summary 37

CHAPTER 5

BENEFIT 2 - HEALTH AID (HA) **40**

5.1 Introduction 40
5.2 Trend of HA applications 40
5.3 HA application by item type 41
5.4 Hospitals utilising HA benefit by state 42
5.5 Summary 43

CHAPTER 6

BENEFIT 3 - COMPLETING CANCER TREATMENT INCENTIVE (CCTI) **44**

6.1 Introduction 44
6.2 Trend of CCTI applications 44
6.3 Socio-demographic of CCTI applicants 45
6.4 Common cancers among CCTI beneficiaries 46
6.5 Cancer stage 46
6.6 Types of cancer treatments 47
6.7 Summary 47

CHAPTER 7

BENEFIT 4 - TRANSPORT INCENTIVE (TI) **48**

7.1 Introduction 48
7.2 Trend of TI applications 48
7.3 Socio-demographic of TI applications 49
7.4 Number of TI by category 50
7.5 Number of TI payouts to beneficiaries 50
7.6 Summary 51

TABLE OF CONTENTS

CHAPTER 8

NON-COMMUNICABLE DISEASE (NCD) 52

8.1 Introduction 52
8.2 Diabetes mellitus (DM) 52
8.3 Hypertension (HPT) 56
8.4 Hypercholesterolemia (HCL) 60
8.5 Anxiety 64
8.6 Depression 67
8.7 Summary 70

CHAPTER 9

PARTNER PROVIDERS 72

9.1 Introduction 72
9.2 Distribution of partner GP & KK 72
9.3 The GP & KK to B40 population ratio by states 73
9.4 The number of beneficiaries screened by providers 73
9.5 Hospital 77
9.6 Laboratory 77
9.7 Vendors supplying HA 79
9.8 Summary 79

CHAPTER 10

REFERRAL FOR INDICATED CASES 80

10.1 Intervention by Strategic Purchasing (SP) team for non-referral cases 82

CHAPTER 11

ACTIVITIES 84

PeKa B40 Promotional Activities 84
11.1 PeKa B40 media launch 84
11.2 Campaigns, advertisements and reports in print & electronic media 84
TV and radio exposure 85
Newspaper exposure 85
11.3 Interpersonal communication 86
11.4 Promotion via outdoor advertising (out of home-OOH) 87
11.5 Campaigns and promotions on social media 87
11.6 Distribution of promotional collaterals 88
11.7 PeKa B40 health screening outreach program 88
11.8 PeKa B40 website 90
11.9 Frequently asked questions (FAQ) 90
11.10 Smart partnership with hypermarket and super mart 90
11.11 Sentiment analysis 90

CHAPTER 12

PAYMENT AMOUNT BY BENEFITS 91

12.1 Introduction 91
12.2 Amount paid for all benefits 91

CHAPTER 13

DISCUSSION 92

13.1 Introduction 92
13.2 B40 population in Malaysia 92
13.3 Enhanced access to healthcare by public-private partnership 93
13.4 NCDs among PeKa B40 beneficiaries 93
13.5 Risk factors among PeKa B40 beneficiaries 94
13.6 Conclusion 95
13.7 Limitations 95
13.8 The way forward and recommendations 96

ACKNOWLEDGEMENT 98
REFERENCES 99

PeKa B40 Report 2019/2020

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FROM THE CEO

DR. ANAS ALAM FAIZLI

Assalamualaikum wrt. wbrkt. and Salam Sejahtera,

We pray that you are in the best of health. ProtectHealth Corporation Sdn. Bhd. (ProtectHealth) has earlier this year been appointed as the implementer of the Private Medical Practitioner participation for Program Imunisasi COVID-19 Kebangsaan (PICK) to fight the COVID-19 virus. This appointment came given ProtectHealth experience in Strategic Purchasing, our strong relationship with the private sector and our purpose in elevating the health conditions, especially of citizens from the lower B40 population.

In 2019 and 2020, ProtectHealth has been administering the *Skim Peduli Kesihatan untuk Kumpulan B40* (PeKa B40) from an infant to a capable company. As Ministry of Health's (MOH's) not-for-profit company, we play a critical role in ensuring the extension of help and assistance are implemented in an efficient and proper manner. As such, ProtectHealth has developed a proprietary software as the core brain of our PeKa B40, with in-house capabilities that can do strategic purchasing, claims management, medical audit and analytics, helpdesk, and support, including outreach communications both on the ground and via social media. We believe that this is our first achievement and success.

Secondly, we are the first buyer in the country that has successfully purchased services from both public and private providers, with PeKa B40 benefits discharged through providers from 1,899 General Practitioners (GPs), 182 lab partners, 893 *Klinik Kesihatan*

(KK) and 145 MOH Hospitals. From this successful strategic collaboration as part of PeKa B40 Benefit 1, we have as of 31st December 2020, screened over 460,000 beneficiaries. Through that, we have diagnosed over 135,000 cases of newly diagnosed non-communicable diseases (NCDs). This contributes to massive cost savings for the nation via early treatment and prevention of complications, making it our third success.

ProtectHealth has also saved an estimated 38.7% of cardiac stent cost through price negotiation for Drug-Eluting Stent (DES), which is a part of our PeKa B40 Benefit 2. This is just the beginning, and we will continue our efforts to reduce the cost of healthcare on behalf of the Government. As we soldier on, ProtectHealth will continue to strengthen our fundamentals, strive to build our capabilities, keep true to its founding mandate and fully optimise digital technologies in delivering PeKa B40.

Lastly and most importantly, my personal aspiration and vision is for ProtectHealth to ensure that future generations will inherit a healthier Malaysia!

Thank you.

"Lebih PeKa, Lebih Cakna"

DR. ANAS ALAM FAIZLI
Chief Executive Officer

LIST OF TABLES

TABLE 1	: Socio-Demographic Background of BSH Recipient Registered in 2019 Eligible for the PeKa B40 Scheme	23
TABLE 2	: Socio-Demographic Background of Beneficiaries Based on the First and Second Visit of HS	24
TABLE 3	: Prevalence of Existing Medical Disease by Gender for PeKa B40 Beneficiaries Apr 2019 – Dec 2020, based on Medical History	27
TABLE 4	: Age-Specific Prevalence of Existing Medical Disease by Age Group for PeKa B40 Beneficiaries	28
TABLE 5	: Prevalence of Existing Diseases by Ethnicity for PeKa B40 Beneficiaries	28
TABLE 6	: Prevalence of Obesity Among PeKa B40 Beneficiaries	34
TABLE 7	: Prevalence of Physical Activity (Based on MET Score) among PeKa B40 Beneficiaries	35
TABLE 8	: Prevalence of Current Smokers Among PeKa B40 Beneficiaries	36
TABLE 9	: Types of HA and Number of Applications Awarded by Year	41
TABLE 10	: Socio-Demographic Characteristics of CCTI Recipients	45
TABLE 11	: Types of Cancer Among CCTI Beneficiaries	46
TABLE 12	: Types of Cancer Treatment	47
TABLE 13	: Socio-Demographic Characteristics of TI Applications	49
TABLE 14	: Number of TI By Category	50
TABLE 15	: Socio-Demographic Backgrounds of Beneficiaries with DM	53
TABLE 16	: DM and the Associated Risk Factors Among PeKa B40 Beneficiaries	54
TABLE 17	: The Statistical Analysis of HbA1c Level	55
TABLE 18	: Socio-Demographic Background of Beneficiaries with HPT	57
TABLE 19	: HPT and the Associated Risk Factors	58
TABLE 20	: The Statistical Analysis of Systolic and Diastolic Pressure	59
TABLE 21	: Socio-Demographic Background of HCL	61
TABLE 22	: HCL and the Associated Risk Factors	62
TABLE 23	: The Statistical Analysis of TC Level	63
TABLE 24	: The Statistical Analysis of LDL Level	63
TABLE 25	: Socio-Demographic Background of Beneficiaries with Anxiety	65
TABLE 26	: The Association of Beneficiaries' Factors and the Presence Of Anxiety	66
TABLE 27	: The Statistical Analysis of GAD Score	67
TABLE 28	: Socio-Demographic Backgrounds of Beneficiaries with Depressive Illness	68
TABLE 29	: Depression and Associated Risk Factors	69

TABLE 30	: The Statistical Analysis of PHQ-9 Score	70
TABLE 31	: Number of Facilities per Population for Aged 40 And Above By State	73
TABLE 32	: The Number of Beneficiaries Screened per Facility Ratio by States	74
TABLE 33	: The Top 20 Hospitals with The Highest Number of Contributions to PeKa B40	77
TABLE 34	: The Number of Laboratory Investigations Performed By Private Partner Laboratories and States	78
TABLE 35	: Number of Vendors Awarded by HA Type	79
TABLE 36	: Definitions of Referral Indications	80
TABLE 37	: Types of Media Exposure	84
TABLE 38	: Event Participation by PeKa B40	86
TABLE 39	: Feedback Categories	90
TABLE 40	: Total Paid for Benefits	91

LIST OF FIGURES

FIGURE 1 : Number of Beneficiaries Screened at General Practitioner (GP) Clinic and Klinik Kesihatan (KK) 27

FIGURE 2 : The Percentage of Beneficiaries that Consented for DRE 30

FIGURE 3 : The Proportion of Beneficiaries with or without Indication and Consent for DRE 30

FIGURE 4 : Total Indications Among Those Who Consented for DRE 30

FIGURE 5 : The Prevalence of Common Risk Factors for Breast Cancer Among Females 31

FIGURE 6 : The Proportion of Abnormal CBE Findings Among Females 31

FIGURE 7 : Top 10 Most Common Diseases 32

FIGURE 8 : The Overall Trend of HA Application 40

FIGURE 9 : HA Application by Treatment Type 41

FIGURE 10 : Percentage of HA Application by Region and State 42

FIGURE 11 : Monthly Trend of CCTI Applications 44

FIGURE 12 : Number of CCTI Applications According to Cancer Stage 46

FIGURE 13 : Monthly Trend of TI Applications 48

FIGURE 14 : Number of TI Payouts for Beneficiaries 51

FIGURE 15 : Geographical Distribution of KKs, GPs and Laboratories in Malaysia 72

FIGURE 16 : The Number of Registered GPs vs Number of HS by State 75

FIGURE 17 : The Number of KKs vs Number of HS by State 76

FIGURE 18 : Overall Number of Laboratory Investigations Performed 78

FIGURE 19 : Overall Referral Pattern by Disease Indications 81

FIGURE 20 : Referral Trend by Month for At Least One Indication 82

FIGURE 21 : Findings on Action Taken Post Intervention 83

ABBREVIATIONS

B40	Bottom 40% Income Group
BMI	Body Mass Index
BMS	Benefit Management System
BOD	Burden of Disease
BSH	*Bantuan Sara Hidup*
CBE	Clinical Breast Examination
CCTI	Completing Cancer Treatment Incentive
CMCO	Conditional Movement Control Order
CPG	Clinical Practice Guideline
DALY	Disability-Adjusted Life Years
DES	Drug-Eluting Stent
DM	Diabetes Mellitus
DOSM	Department of Statistics Malaysia
DRE	Digital Rectal Examination
EU	Existing Uncontrolled
FAMA	Federal Agricultural Marketing Authority
FELDA	Federal Land Development Authority
GAD	Generalised Anxiety Disorder
GMEC	Government Monitoring Evaluation Committee
GP	General Practitioner
HA	Health Aid
HbA1C	Glycated Haemoglobin
HCL	Hypercholesterolemia
HS	Health Screening
HS1	Health Screening Visit 1
HS2	Health Screening Visit 2
HPT	Hypertension
IOL	Intraocular Lens
IT	Information Technology
KK	*Klinik Kesihatan*
LDL	Low-density Lipoprotein
LHDN	*Lembaga Hasil Dalam Negeri*
LKIM	*Lembaga Kemajuan Ikan Malaysia*
LPP	*Lembaga Pertubuhan Peladang*
M40	Middle 40% Income Group
MCO	Movement Control Order
MET	Metabolic Equivalent of Task
Mill	Millions
MOH	Ministry of Health, Malaysia
MoU	Memorandum of Understanding
NCD	Non-Communicable Disease
ND	Newly Diagnosed
NHMS	National Health and Morbidity Survey
OCP	Oral Contraceptive Pill
OOP	Out of Pocket
PeKa B40	*Skim Peduli Kesihatan untuk Kumpulan B40*
PHC	Primary Health Care
ProtectHealth	ProtectHealth Corporation Sdn. Bhd.
PHQ	Patient Health Questionnaire
RISDA	Rubber Industry Smallholders Development Authority
RMCO	Recovery Movement Control Order
SDG	Sustainable Development Goal
SES	Socio-economic Status
SOP	Standard Operational Procedure
SP	Strategic Purchasing
T20	Top 20% Income Group
TAT	Turnaround Time
TC	Total Cholesterol
TI	Transport Incentive
UN	United Nations
WP	*Wilayah Persekutuan*
YLD	Years Lived with Disability
YLL	Years of Life Lost

AT A GLANCE

15 April 2019 to 31 December 2020

BENEFIT 1

Health Screening

Of those B40 population
457,462
attended the first visit health screening
422,303 (92.3%)
attended the second visit health screening
RM38.5 Mill
total paid for Health Screening

BENEFIT 2

Health Aid

Of those screened
20,422
beneficiaries claimed for HA (22,251 applications)
17,213 (84.3%)
approved HA claims (18,623 applications)
RM20.9 Mill
total paid for Health Aid

BENEFIT 3

Completing Cancer Treatment Incentive

Of those screened
4,326
beneficiaries claimed for CCTI (5,357 applications)
3,396 (78.5%)
Approved CCTI claims (4,258 applications)
RM1.6 Mill
total incentive paid for Completing Cancer Treatment Incentive

BENEFIT 4

Transport Incentive

Of those screened
8,667
beneficiaries claimed for TI (15,956 applications)
7,766 (89.6%)
Approved TI claims (14,192 applications)
RM1.5 Mill
total incentive paid for Transport Incentive

Newly Diagnosed NCDs

Diabetes
10.4% of beneficiaries have newly diagnosed diabetes.

Hypercholesterolemia
29.8% of beneficiaries have newly diagnosed hypercholesterolemia.

Hypertension
13.8% of beneficiaries have newly diagnosed hypertension.

Depression
1.5% of beneficiaries have newly diagnosed depression.

Anxiety
0.6% of beneficiaries have newly diagnosed anxiety.

EXECUTIVE SUMMARY

Skim Peduli Kesihatan untuk Kumpulan B40 (PeKa B40) is an initiative to address the growing burden of NCDs, specifically among the lower-income population. The primary aim is for early detection of NCDs and early intervention. The main focus of this initiative is on the primary and secondary level of prevention strategies through four healthcare benefits; Health Screening (HS), Health Aid (HA), Completing Cancer Treatment Incentive (CCTI) and Transport Incentive (TI).

In 2020, about 4.4 million from the B40 population in the age group of 40 years and above were listed with Inland Revenue Board as *Bantuan Sara Hidup* (BSH) recipients and were eligible for PeKa B40 benefits.

Since the take-off in April 2019, a total of 457,462 beneficiaries have been screened, of which 422,303 (92.3%) have completed the second visit. The total cost paid for HS in 2019 and 2020 were RM9.1 million and RM16.2 million, respectively. The total cost paid for private lab services in 2019 and 2020 were RM4.5 million and RM8.7 million, respectively. The male to female ratio was almost 1:1, and it covers all ethnic compositions and from all states. Some states in the Northern Region had achieved the targeted number of screenings for a year.

The number of beneficiaries screened increased exponentially since its launch, with a peak in December 2019. However, it dropped dramatically during the first quarter of 2020. The COVID-19 pandemic had a significant impact on the number of visits for HS. The drop was even more profound after the enforcement of the Movement Control Order (MCO) on 18th March 2020.

The overall prevalence of current smokers was 10%, which was lower than the prevalence reported by National Health and Morbidity Survey (NHMS) 2019. However, it was apparently high among males, with the gender-specific prevalence of 24% vs 1% among females. Meanwhile, 14% of beneficiaries, especially among younger age groups and women, were obese. On the other hand, 15% of the elderly were underweight, which needed to be addressed.

The common existing morbidities were NCDs such as hypertension (HPT), hypercholesterolemia (HCL) and diabetes mellitus (DM), with the prevalence of 56.2%, 42.2% and 31.6%, respectively. A significant proportion during the HS were newly diagnosed NCDs. The proportion of newly diagnosed DM, HPT, HCL, anxiety and depression were 10.4%, 13.8%, 29.8%, 0.6% and 1.5%, respectively.

Similarly, the trend for Benefit 2 showed that HA applications were increasing but dropped during the first quarter of 2020 and the MCO period. The highest number of HA applications were from the Northern Region. The most common HA items were Intraocular Lenses (IOLs), hearing aids and cardiac stent with the applications at 43.5%, 19.0% and 10.7%, respectively. The total cost paid for HA was RM1.8 million in 2019 and RM19 million in 2020. A total of 4,326 beneficiaries applied for CCTI, which constituted 5,357 total claims applications, whereby 4,258 applications were approved. The total cost paid was RM0.4 million in 2019 and RM1.2 million in 2020. TI claims were tied together to either HA or CCTI. A total of 8,667 beneficiaries applied for TI, of which 7,766 were approved. The total cost paid for TI in 2019 and 2020 were RM0.6 million and RM0.9 million, respectively.

PeKa B40 promoted public-private partnership in the provision of healthcare. Over a period of one year and nine months, a total of 1,899 GPs and 893 Government Health Clinics/*Klinik Kesihatan* (KKs) registered as service providers. The lab investigations were supported by 182 private and public laboratories. The highest number of GPs registered are in the Selangor state. However, the coverage was still low due to high population density in addition to the existence of funding from other schemes such as *Peduli Sihat Selangor*, which also offered treatment packages. The highest number of KK involvement was in Sarawak, where KKs mostly served the remote and sparse population areas.

In summary, since the start of the PeKa B40 initiative in 2019, about 10% of total BSH aged 40 and above have been screened based on the budget allocated. PeKa B40 scheme had successfully detected a significant percentage of newly diagnosed NCDs and poorly controlled existing illnesses, which prompted the early intervention of the disease. Early treatment for NCDs will hinder the disease progression and prevent complications, which can jeopardise the individual's quality of life with a higher cost for treatment. In other words, PeKa B40's ultimate goal is to improve the quality of life of the B40 population via disease prevention, early treatment of NCDs and prevention of disease complications towards a productive, healthy living for a better Malaysia.

CHAPTER 1: BACKGROUND

Skim Peduli Kesihatan untuk Kumpulan B40 (PeKa B40) is a government initiative via the Ministry of Health (MOH) as part of its efforts to address the growing burden of non-communicable diseases (NCDs). PeKa B40 is an initiative carried out by ProtectHealth Corporation Sdn. Bhd. (ProtectHealth), a not-for-profit company under MOH.

The focus of PeKa B40 is to reduce the burden of NCDs through early screening and treatment with an objective to expand access to quality health care. This, in return, will reduce the cost of living and the wellbeing of the target population. At the same time, the PeKa B40 initiative aims to strengthen public-private partnership while prioritising primary health care.

PeKa B40 was founded based on the following findings:

1. 47.6% of the B40 aged 40 and above suffer from at least one NCD that has not yet been diagnosed. (Institute for Public Health, 2015)

2. 3 out of 10 adults suffer from mental health problems. The B40 group records a higher rate than the non-B40 group with 32% vs 28%. (Institute for Public Health, 2015)

3. Cancer prevalence is increasing as 60% of cases are detected at late stages, when the chance for recovery is very low. (National Cancer Institute, 2017)

4. Many patients do not comply with or complete their cancer treatment plan. When their cases are presented to the hospital at a very late stage, it reduces the chances of recovery and subsequently increases the cost of treatment.

5. Although the government heavily subsidises treatment in MOH hospitals, some of the costs of medical equipment are still borne by the patient, such as the costs for cardiac pacemakers, spinal implants, etc. This can be a financial burden to the lower-income population.

6. Many underprivileged patients, especially in the rural areas, do not follow through with their treatments due to financial constraints, which hinder them from paying for transportation.

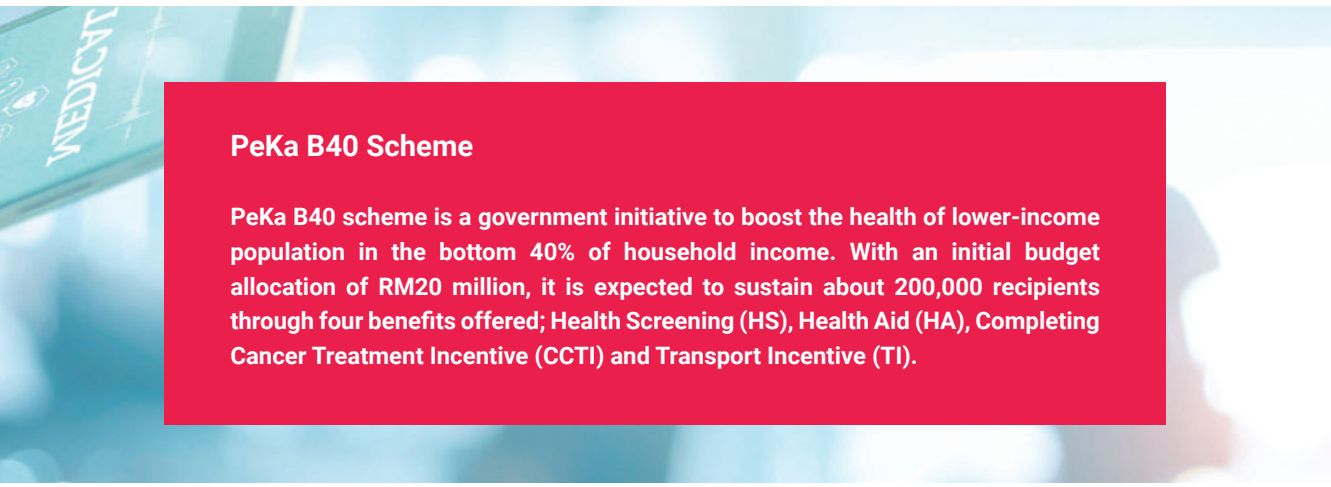
With the initial budget allocation of RM20 million in 2019, the pioneer project began and was estimated to sustain 200,000 recipients in the target population across Malaysia. It is offered to Malaysian citizens in the bottom 40% of the household income range. When the scheme was launched on15 April 2019, the primary focus was those aged 50 and above, which later expanded to 40 years and above in January 2020. There are four benefits offered:

1. Health Screening (HS)
2. Health Aid (HA)
3. Completing Cancer Treatment Incentive (CCTI)
4. Transport Incentive (TI)

The eligible beneficiaries can go for screening at either Government Health Clinics/*klinik kesihatan* (KKs) or GP clinics. Once screening is done, beneficiaries are eligible for other benefits, including Benefit 2 (Health Aid/HA) with a lifetime limit of RM20,000, Benefit 3 (Completing Cancer Treatment Incentive/CCTI) if beneficiaries are verified as cancer patients and have completed the treatment plan in MOH Hospitals, and Benefit 4 (Transport Incentive/TI) if beneficiaries are eligible for Benefit 2 and Benefit 3. Over 100,000 people were screened within six months of the scheme's launch in mid-April 2019.

The GPs and private laboratories are contracted to do the screening, especially in the urban areas where there is an abundance of GPs available. For more rural areas, KK, which is the public sector's primary care provider, is recruited to screen these beneficiaries, where blood and urine samples are sent to the nearest private laboratories available. There is no registration needed for PeKa B40. Once beneficiaries are eligible for BSH under *Lembaga Hasil Dalam Negeri* (LHDN) and at the age of 40 years and above, both recipients and their spouses are automatically eligible for PeKa B40 benefits. However, the screening is a prerequisite for other benefits offered under PeKa B40.

The purpose of this report is to document the progress and achievements of the PeKa B40 scheme from 2019-2020.



PeKa B40 Scheme

PeKa B40 scheme is a government initiative to boost the health of lower-income population in the bottom 40% of household income. With an initial budget allocation of RM20 million, it is expected to sustain about 200,000 recipients through four benefits offered; Health Screening (HS), Health Aid (HA), Completing Cancer Treatment Incentive (CCTI) and Transport Incentive (TI).

CHAPTER 2: METHODOLOGY

2.1 Data Source and Data Management

The source of data is mainly from the PeKa B40 Information Technology (IT) system/Benefit Management System (BMS).

2.2 Variables Definitions

Some existing and generated variable definitions are:

Diagnosis
Diagnosis as written by the attending doctors regardless of with or without lab data availability.

NCDs
Non-communicable diseases (NCDs) in this context are referring to five priority diseases:
a) Diabetes Mellitus (DM)
b) Hypertension (HPT)
c) Hypercholesterolemia (HCL)
d) Anxiety
e) Depression

Newly diagnosed NCD criteria (New diagnosis)
- New DM – No existing DM, and HbA1c is ≥ 6.3%
- New HPT – No existing HPT, and systolic blood pressure is ≥ 140 and/or diastolic ≥ 90
- New HCL – No existing HCL, and total cholesterol (TC) level is ≥ 5.2
- Anxiety – No existing mental illness, and Generalised Anxiety Disorder (GAD) score is ≥ 10
- Depression – No existing mental illness, and Patient Health Questionnaire (PHQ) score is ≥ 10

Metabolic Equivalent of Task (MET)
The MET was used to calculate the level of physical activity of the beneficiaries.
a) Active
   i. Vigorous for at least three days, and achieves 1500 MET/3 days, or
   ii. More than seven days with any combination of walking/moderate/vigorous activity and achieves 3000 MET/week
b) Minimally Active
   i. More than three days of vigorous activity of at least 20 minutes/day, or
   ii. More than five days of moderate activity/walking of at least 30 minutes/day, or
   iii. More than five days with any combination of walking/moderate/vigorous activity and achieves at least 600 minutes/week
c) Inactive – this is the lowest physical activity. Those individuals who do not meet the criteria for categories (a) or (b) are considered "insufficiently active".

2.3 Statistical Method

Data management is mostly carried out by using the STATA statistical package version 13. The descriptive analysis comprised calculation of frequency, fractions, rates, measures of central tendencies and dispersion.

The significant association between categorical variables is tested by the chi-square test. The alpha (α) value of 0.05 is taken as the critical limit for rejecting the null hypothesis.

Calculation of the prevalence of disease

Prevalence is defined as the proportion of existing and newly diagnosed NCD among the PeKa B40 beneficiaries and presented as a percentage. The "study population" in this context is the PeKa B40 beneficiaries who have attended the first health screening (HS1).

$$\textit{Prevalence of disease} = \frac{\textit{The number of existing disease + newly diagnosed disease}}{\textit{Total number of beneficiaries who attended HS1}} \times 100\%$$

The results are presented in the form of tables and charts. Some numeric variables such as HbA1c level and blood pressure are visualised with a box and whiskers plot to assess the skewness and extreme outliers of the data. The extreme outliers were validated to find the possibility of typos, wrong column entries or possibly authentic results. The outliers were treated accordingly.

This report documented the PeKa B40 programme statistics over one year and nine months of the first and second year of its implementation. Analysed data were between 15th April 2019 to 31st December 2020 using a dataset downloaded from the BMS on 1st February 2021.

CHAPTER 3: SOCIO-DEMOGRAPHIC

3.1 Introduction

This chapter describes the socio-demographic characteristic of the BSH and the attributes of PeKa B40 beneficiaries. The descriptions are in terms of the proportion of total BSH populations, geographical distributions and other characteristics, including gender, age groups and ethnicity.

3.2 Socio-Demographic Background of BSH Beneficiaries

Data of eligible beneficiaries were obtained from LHDN. These are the population approved for BSH in 2019. A total of 4.4 million beneficiaries and their spouses aged 40 years old and above were approved in 2019.

During the initial phase of PeKa B40 scheme implementation in 2019, it targeted beneficiaries aged 50 and above. There was a total of about 3.9 million beneficiaries aged 50 and above, which comprised approximately 86.7% of the total BSH population.

Since January 2020, the scheme had been expanded to include those aged 40 years old and above. There was a total of 4.4 million of the BSH population aged 40 years and above (applicants + spouses), which is about 14.1% of the total Malaysian population. The distribution by states varies between 2% to 20%, whereby a higher proportion was from states in the Northern and East Coast Regions.

Table 1: Socio-Demographic Background of BSH Recipient Registered in 2019 Eligible for the PeKa B40 Scheme

State	Total Malaysia Population in 2019	BSH age 40 and above with spouse registered in 2019	Percentage
Johor	3,761,200	538,783	14%
Kedah	2,173,700	415,704	19%
Kelantan	1,883,800	315,675	17%
Melaka	928,400	140,572	15%
Negeri Sembilan	1,126,200	165,414	15%
Pahang	1,671,400	242,304	14%
Pulau Pinang	1,768,800	265,973	15%
Perak	2,508,800	482,763	19%
Perlis	254,000	51,152	20%
Selangor	6,506,100	539,467	8%
Terengganu	1,244,500	193,996	16%
Sabah	3,904,400	355,312	9%
Sarawak	2,806,000	505,176	18%
W.P. Kuala Lumpur	1,782,500	186,060	10%
W.P. Labuan	99,300	9,115	9%
W.P. Putrajaya	103,700	2,094	2%
Malaysia	**32,522,800**	**4,409,560**	**13.6%**

3.3 Socio-Demographic Background of PeKa B40 Beneficiaries

A total of 457,462 beneficiaries have been screened for the first time (HS1), of which 422,303 (92.3%) completed the second visit (HS2). The biggest proportion, 38.9% of the beneficiaries, were aged between 60-69 years old, followed by those aged 50-59 years old (28.0%). The gender ratio of PeKa B40 is nearly 1:1.

The ethnic patterns were similar to the nation's ethnic composition, in which the Malays made up the biggest proportion, followed by the Chinese and the Indians with a proportion of 50.7%, 23.8% and 10.7%, respectively. The remainders consist of indigenous Sabah, Sarawak, Orang Asli and others (refer to Table 2).

Table 2: Socio-Demographic Background of Beneficiaries Based on the First and Second Visit of HS

Characteristics	HS1		HS2	
	Number of Visit	%	Number of Visit	%
Gender				
Male	191,761	41.9	177,381	42.0
Female	265,701	58.1	244,922	58.0
Age group				
40-49	39,104	8.5	35,473	8.4
50-59	128,181	28.0	117,848	27.9
60-69	177,836	38.9	164,554	39.0
70 and above	112,341	24.6	104,428	24.7
Ethnicity				
Malay	232,108	50.7	209,533	49.6
Chinese	108,649	23.8	103,990	24.6
Indian	48,892	10.7	45,150	10.7
Indigenous Sabah	27,231	6.0	25,671	6.1
Indigenous Sarawak	32,991	7.2	30,788	7.3
Orang Asli	2,490	0.5	2,339	0.6
Others	5,101	1.1	4,832	1.1
State				
Johor	39,246	8.6	35,649	8.4
Kedah	68,281	14.9	64,924	15.4
Kelantan	43,673	9.5	39,504	9.4
Melaka	18,372	4.0	15,276	3.6
Negeri Sembilan	24,401	5.3	22,856	5.4
Pahang	15,500	3.4	13,591	3.2
Pulau Pinang	33,052	7.2	31,934	7.6
Perak	54,529	11.9	50,255	11.9
Perlis	8,222	1.8	7,156	1.7
Selangor	23,257	5.1	21,104	5.0
Terengganu	17,100	3.7	14,918	3.5
Sabah	36,028	7.9	34,097	8.1
Sarawak	65,403	14.3	61,959	14.7
W.P. Kuala Lumpur	9,700	2.1	8,535	2.0
W.P. Labuan	515	0.1	367	0.1
W.P. Putrajaya	183	0.0	178	0.0
Total HS1 = 457,462 Total HS2 = 422,303				

Note: The numbers for state are based on beneficiaries' address

3.4 Summary

About 4.4 million of the B40 population aged 40 years old and above, which constitute about 13.6% of the total population, were approved by LHDN for BSH. Since the start of the PeKa B40 scheme till 31 Dec 2020, it has successfully screened for NCDs for about 10% of the BSH population.

Highlights

In 2019/2020 about 4.4 million BSH beneficiaries aged 40 years old and above, which comprised 13.6% of the total Malaysian population, were eligible for the PeKa B40 benefits. Since the start of this scheme, 457,462 (10%) of the BSH population has been successfully screened.

CHAPTER 4: BENEFIT 1 - HEALTH SCREENING (HS)

4.1 Introduction

All beneficiaries are subjected to HS. It is a compulsory requirement before they are eligible for other benefits offered. The HS was carried out by the attending doctors, either GPs or doctors at government health clinics or hospitals. The HS protocols are comprehensive, covering:

1. History taking

2. Physical examination

a) Body Mass Index (BMI) Assessment
b) Blood pressure measurement
c) Digital Rectal Examination (DRE)
d) Clinical Breast Examination (CBE)
e) Chest and abdomen examination
f) Other signs of illness

3. Mental state assessment using validated assessment tool, i.e.

a) GAD
b) PHQ

4. Blood and urine examination

a) UFEME
b) HbA1c
c) Lipid profile
d) Renal profile
e) Liver profile

The beneficiaries were required to attend the clinic session twice. The first session (HS1) consists of all the documentation for items 1 to 4 above and lab sample collection (blood and urine samples). The second visit (HS2) is a follow-up visit to review the lab results, undergo consultation and referral if there is an indication for the beneficiaries to have further management.

4.2 Trend of Health Screening (HS)

All PeKa B40 beneficiaries are required to go for HS. It is to allow beneficiaries to apply for Benefits 2, 3 and 4. From 15th April 2019 till 31st Dec 2020, a total of 457,462 beneficiaries had been screened (HS1). The attendance for HS were increasing at all facilities; KKs, GPs and hospitals. The upward trend was evident, especially between April 2019 and December 2020.

However, there was a sudden drop in the number of beneficiaries screened (about 34% drop) at GPs in January 2020 as compared to December 2019. Even though the number seemed to be picking up in February 2020, it started declining dramatically since the first reported case of COVID-19 in Malaysia on 24th February 2020 due to the scare of the COVID-19 epidemic. The number dramatically dropped since the COVID-19 pandemic was declared by WHO and the enforcement of the MCO on 18th March in Malaysia (refer to Figure 1). Fortunately, the screening number gradually picked up during the Conditional Movement Control Order (CMCO).

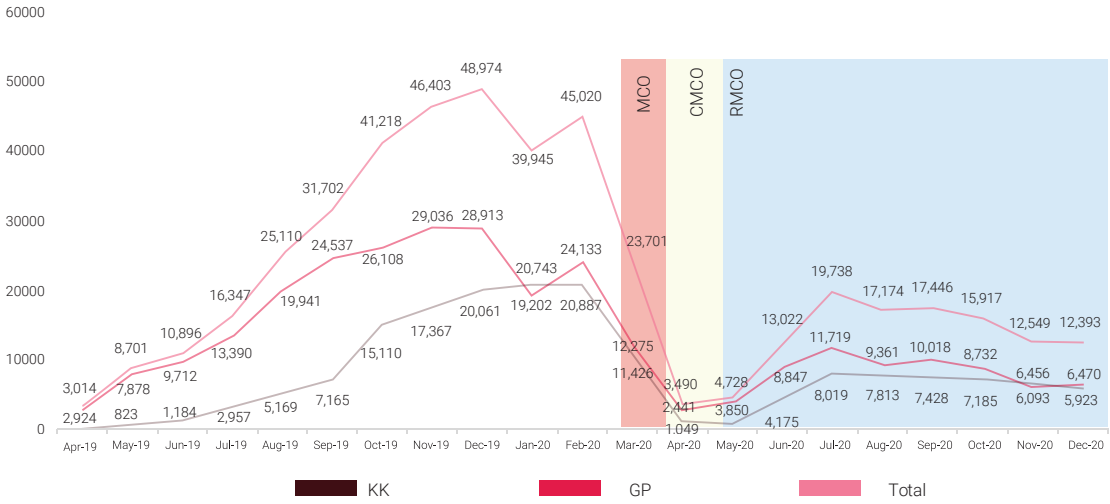


Figure 1: Number of Beneficiaries Screened at General Practitioner (GP) Clinic and Klinik Kesihatan (KK)

4.3 Medical History

Traditionally, health screening begins with history taking. Based on the medical history, only 27% of the beneficiaries did not report a prior history of any illness. In general, HPT is the main pre-existing disease (57%), followed by HCL, DM and heart disease, with 43%, 32% and 6%, respectively. A similar pattern was observed among both genders (refer to Table 3).

Among those with no previous medical history, 34% were aged 50-59 years old, followed by 60-69 (23%) and 70 years and above (18%) (refer to Table 4). By ethnicity, indigenous Sarawak has the highest prevalence for both HPT (64%) and HCL (44%), followed by the Malays (59% and 44% respectively) and the Chinese (55% and 43% respectively) (refer to Table 5).

Table 3: Prevalence of Existing Medical Disease by Gender for PeKa B40 Beneficiaries Apr 2019 – Dec 2020, Based on Medical History

Medical history	Male		Female		Total	
	Frequency	%*	Frequency	%**	Frequency	%***
Hypertension	103,553	55%	152,785	58%	256,338	57%
Hypercholesterolemia	75,925	40%	117,750	45%	193,675	43%
Diabetes mellitus	58,667	31%	86,392	33%	145,059	32%
Coronary heart disease	17,661	9%	10,421	4%	28,082	6%
Asthma	6,062	3%	9,160	3%	15,222	3%
Chronic kidney disease	6,815	4%	5,842	2%	12,657	3%
Stroke	6,820	4%	4,765	2%	11,585	3%
Breast cancer	623	0%	3,668	1%	4,291	1%
Mental illness	1,371	1%	1,959	1%	3,330	1%
Colorectal cancer	1,365	1%	1,388	1%	2,753	1%
Epilepsy	1,017	1%	1,150	0%	2,167	0%
Lung cancer	849	0%	936	0%	1,785	0%
Others	24,422	13%	26,258	10%	50,680	11%
None	53,601	28%	67,954	26%	121,555	27%

Age-group 40 years and above
% Percentage out of male gender*
*%** Percentage out of female gender*
*%*** Percentage out of the total population*
One beneficiary may have more than one disease

Table 4: Age-Specific Prevalence of Existing Medical Disease by Age Group for PeKa B40 Beneficiaries

Medical history	40 - 49 years old		50 - 59 years old		60 - 69 years old		70 and above		Total	
	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%**
Hypertension	11,972	31%	60,169	47%	106,826	61%	77,371	70%	256,338	57%
Hypercholesterolemia	8,973	23%	47,486	37%	82,954	47%	54,262	49%	193,675	43%
Diabetes mellitus	7,299	19%	37,034	29%	63,038	36%	37,688	34%	145,059	32%
Coronary heart disease	996	3%	5,827	5%	11,728	7%	9,531	9%	28,082	6%
Asthma	1,182	3%	4,232	3%	6,080	3%	3,728	3%	15,222	3%
Chronic kidney disease	438	1%	2,791	2%	5,140	3%	4,288	4%	12,657	3%
Stroke	387	1%	2,694	2%	4,863	3%	3,641	3%	11,585	3%
*** Breast cancer	242	1%	1,322	1%	1,750	1%	977	1%	4,291	1%
Mental illness	187	0%	1,075	1%	1,328	1%	740	1%	3,330	1%
Colorectal cancer	84	0%	741	1%	1,130	1%	798	1%	2,753	1%
Epilepsy	119	0%	708	1%	803	0%	537	0%	2,167	0%
Lung cancer	57	0%	532	0%	718	0%	478	0%	1,785	0%
Others	3,076	8%	12,304	10%	20,147	11%	15,153	14%	50,680	11%
None	19,109	50%	42,769	34%	40,107	23%	19,570	18%	121,555	27%

*% * Percentage out of age group*
*% ** Percentage out of the total population*
*** Total Female Population=262,481*
One beneficiary may have more than one disease

Table 5: Prevalence of Existing Diseases by Ethnicity for PeKa B40 Beneficiaries

Medical history	Malay		Chinese		Indian		Indigenous Sabah		Indigenous Sarawak		Orang Asli		Others		Total	
	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%*	Frequency	%**
Hypertension	134,044	59%	59,388	55%	24,929	52%	13,074	48%	20,970	64%	968	39%	2,965	58%	256,338	57%
Hypercholesterolemia	100,971	44%	46,941	43%	20,361	42%	8,414	31%	14,301	44%	574	23%	2,113	42%	193,675	43%
Diabetes mellitus	81,846	36%	26,385	24%	22,728	47%	4,677	17%	7,919	24%	245	10%	1,259	25%	145,059	32%
Coronary heart disease	13,911	6%	6,471	6%	4,772	10%	1,114	4%	1,531	5%	45	2%	238	5%	28,082	6%
Asthma	8,161	4%	1,982	2%	2,633	5%	843	3%	1,384	4%	40	2%	179	4%	15,222	3%
Chronic kidney disease	7,687	3%	2,070	2%	1,124	2%	662	2%	932	3%	29	1%	153	3%	12,657	3%
Stroke	6,097	3%	2,737	3%	1,362	3%	554	2%	709	2%	33	1%	93	2%	11,585	3%
*** Breast cancer	1,686	1%	1,482	1%	412	1%	155	1%	506	2%	5	0%	45	1%	4,291	2%
Mental illness	1,091	0%	1,277	1%	346	1%	96	0%	474	1%	9	0%	37	1%	3,330	1%
Colorectal cancer	1,006	0%	899	1%	210	0%	105	0%	489	2%	9	0%	35	1%	2,753	1%
Epilepsy	780	0%	574	1%	267	1%	68	0%	450	1%	6	0%	22	0%	2,167	0%
Lung cancer	608	0%	532	0%	114	0%	56	0%	448	1%	6	0%	21	0%	1,785	0%
Others	22,565	10%	14,865	14%	5,462	11%	3,961	15%	3,041	9%	215	9%	571	11%	50,680	11%
None	58,443	26%	29,909	28%	12,210	25%	10,029	37%	8,282	25%	1,252	51%	1,430	28%	121,555	27%

% Percentage out of the ethnic group*
*%** Percentage out of the total population*
*** Total Female Population=262,481*
One beneficiary may have more than one disease

4.4 Physical Examination

4.4.1 General Examination

The general examination is part of the routine physical examination by doctors. The assessment includes general appearance, an examination of height and weight to assess BMI (described in detail in sub-section Risk factors on page 33). The examination of respiratory and cardiovascular systems was also included. The result of blood pressure examinations is illustrated in subsection HPT on page 59.

4.4.2 Digital Rectal Examination (DRE)

The DRE is a physical examination for both men and women for suspicion that warrants further investigations for certain cancers such as prostate cancer among men and other health problems such as a rectal tumour. DRE is performed as part of the health screening package, especially if the individual has some indications. Among the indications for DRE include:

- Nocturia (male only)
- Difficult starting urination (hesitancy) (male only)
- Weak flow or poor stream (male only)
- Dribbling after urination (male only)
- Haematuria (male only)
- Blood in semen (male only)
- Abdominal pain (male & female)
- Change in bowel habit (male & female)
- Rectal bleeding (male & female)
- Anorectal pain (male & female)
- Anorectal mass (male & female)

However, all beneficiaries are advised to perform DRE regardless of the presence or absence of any of the above symptoms. Overall, only 7.5% of beneficiaries did not consent to DRE. Among those who consented to DRE, 98.5% did not have any of the above symptoms. On the other hand, 24.1% of those with at least one indication did not agree to perform DRE. Based on the results, males with at least one indication have a higher tendency to disagree for DRE (58%) compared to females (50%). A similar pattern was seen in both genders with no indication (refer to Figure 3).

A total of 2,041 (0.6%) of those who agreed to DRE were found to have some abnormal findings, which needed to be referred for further assessment. About 88% of the abnormal findings were among males, and 12% were females. About 127 (6.2%) of those with no indications were found to have abnormal findings, whereas about 2,783 (0.9%) of those with indications were found to have no abnormal findings.

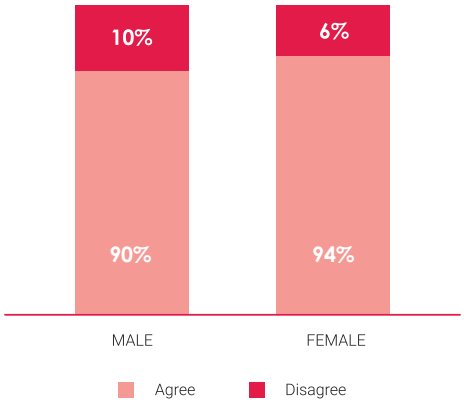


Figure 2: The Percentage of Beneficiaries that Consented for DRE

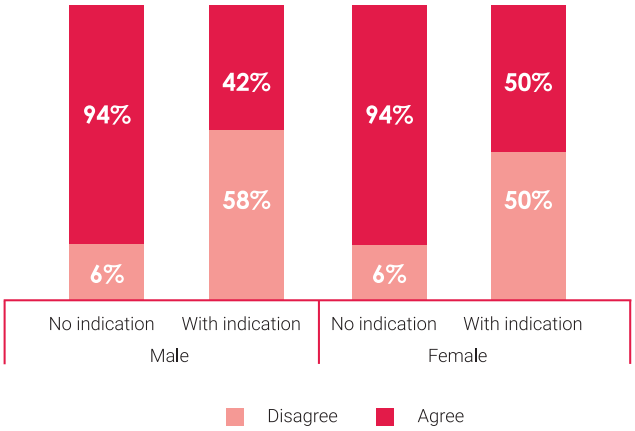


Figure 3: The Proportion of Beneficiaries with or without Indication and Consent for DRE

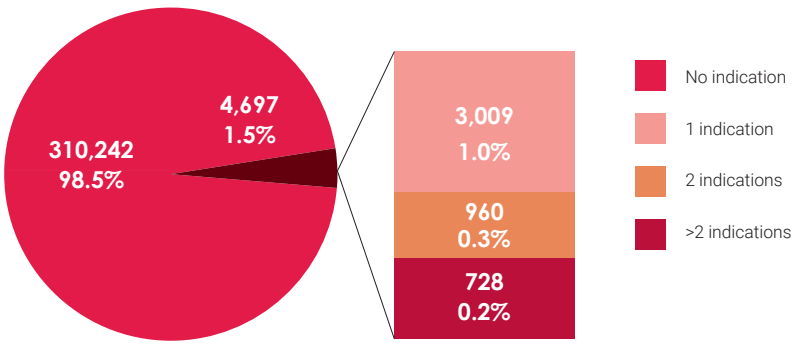


Figure 4: Total Indications Among Those Who Consented for DRE

4.5 Clinical Breast Examination (CBE)

CBE is performed among females as part of the breast cancer screening for PeKa B40 beneficiaries. Some of the risk factors of breast cancer are assessed through the HS questionnaire. Figures 5 and 6 below list the risk factors and their prevalence among PeKa B40 female beneficiaries. The most common breast cancer risk factors among the female beneficiaries were not breastfeeding (15.0%), followed by late menopause (14.1%) and Oral Contraceptives Pills (OCPs) consumption (10.9%). Only 1.6% had a family history of breast cancer.

About 124,622 (47%) of total female beneficiaries had at least one risk factor for breast cancer. Overall, 166,950 (64%) of the beneficiaries consented for CBE, which among those, 79,445 (48%) had at least one of the risk factors. Among those with at least one risk factor, 1,423 (1.8%) had at least one abnormal finding. On the other hand, among those with no risk factor, 809 (0.9%) had at least one abnormal finding.

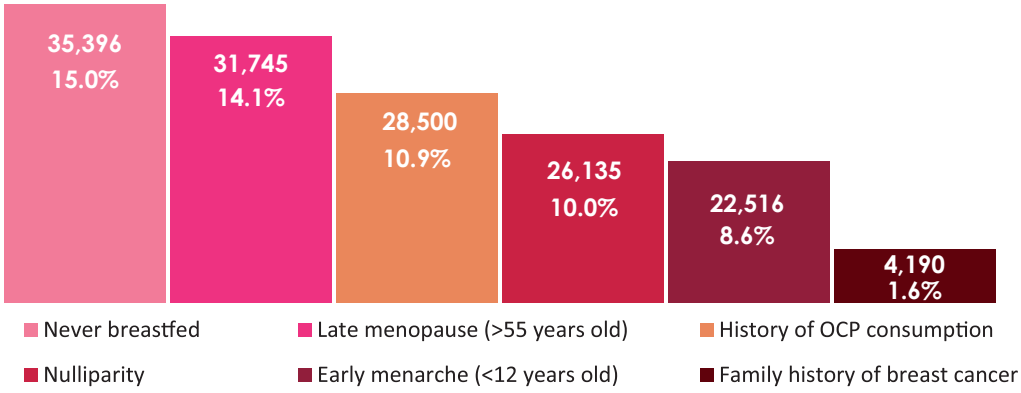


Figure 5: The Prevalence of Common Risk Factors for Breast Cancer Among Females

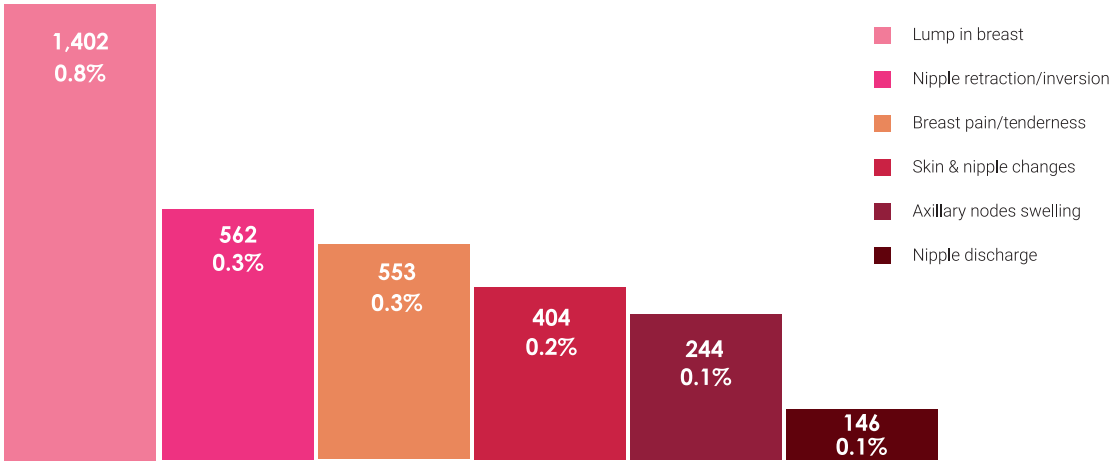


Figure 6: The Proportion of Abnormal CBE Findings Among Females

4.6 Diagnosis

The most common diagnosis recorded from the HS was HCL, where 69% of the beneficiaries screened were either a known case or newly diagnosed with HCL. This is followed by HPT (62%) and DM (39%).

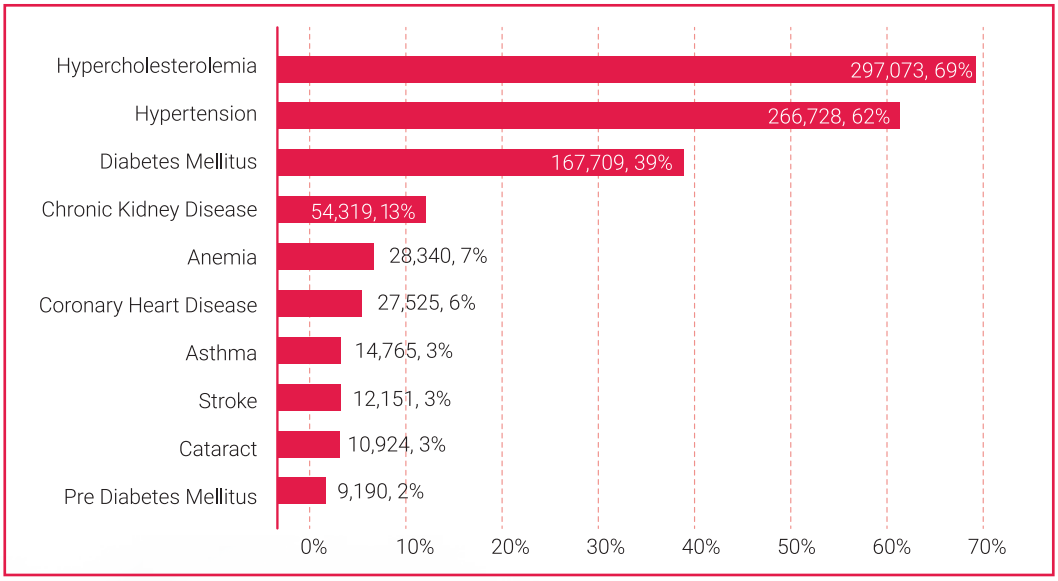


Figure 7: Top 10 Most Common Diseases

4.7 Referral

In the guideline of health screening as stated in the Standard Operating Procedure (SOP), which was aligned with the Clinical Practice Guideline (CPG), the attending doctors are responsible for referring the patients for treatment when there is an indication based on their clinical judgement.

4.8 Risk Factors

Obesity is defined as those with a BMI of 30 and above. In general, about 14% of the beneficiaries were obese. The male to female ratio of obesity is nearly 1:2, where the incidence is double among the females. The prevalence was higher among the younger age group, i.e., 29% of those aged 40-49 years old vs 10% among 70 years and above. On the other hand, the prevalence of underweight with BMI <20 among the elderly (age group of 70 and above) was relatively high compared to other age groups. This age group constitutes 15% of the beneficiaries (refer to Table 6). This possibly indicates malnourishment amongst the elderly age group, which may require intervention.

The prevalence among the ethnic group varies between 11% and 24%. The lowest prevalence is observed among the Chinese and highest among the Indians and Orang Asli (Peninsular). The prevalence among the states varies between 15% and 30%, with WP Putrajaya recording the highest rate of obesity, followed by Melaka 27%, and the lowest rate was Kelantan and Pulau Pinang at 15% (refer to Table 6).

The level of physical activity is calculated based on the Metabolic Equivalent of Task (MET), which is a ratio of working metabolic rate relative to resting metabolic rate. The physical activity was low, whereby less than 10% of both males and females were physically active. The majority were only minimally active (refer to Table 7).

The overall prevalence of current smokers was 10% of total beneficiaries, which is relatively low. However, it was apparently high among males, with a gender-specific prevalence of 24% vs 1% among females. The highest age-specific prevalence was among the younger age group, with 14% among those aged 40-49 years old. Indigenous Sabah recorded the highest ethnic-specific prevalence of 13% vs the lowest prevalence among indigenous Sarawak and Indians at 8%. The prevalence among the states did not vary significantly, with the minimum state-specific prevalence of 9% and maximum state-specific prevalence of 14% (refer to Table 8).

Table 6: Prevalence of Obesity Among PeKa B40 Beneficiaries

Characteristics	BMI GROUP								Total
	Less than 20		20 - 24		25 - 29		More than 30		
Overall	**31,393**	**8.7%**	**134,235**	**37.2%**	**126,587**	**35.1%**	**68,917**	**19.1%**	**361,132**
Gender									
Male	13,992	9%	62,239	41%	54,091	36%	21,457	14%	**151,779**
Female	17,401	8%	71,996	34%	72,496	35%	47,460	23%	**209,353**
Age Group									
40 - 49	1,953	5%	11,658	30%	14,421	37%	11,226	29%	**39,258**
50 - 59	5,656	6%	31,861	34%	34,518	37%	21,877	23%	**93,912**
60 - 69	12,087	8%	56,421	37%	54,936	36%	28,064	19%	**151,508**
70 and above	11,697	15%	34,295	45%	22,712	30%	7,750	10%	**76,454**
Ethnicity									
Malay	13,008	7%	61,529	35%	63,788	36%	40,002	22%	**178,327**
Chinese	10,246	12%	39,960	45%	28,159	32%	9,761	11%	**88,126**
Indian	2,268	6%	12,759	32%	15,136	38%	9,466	24%	**39,629**
Indigenous Sabah	2,494	11%	8,718	39%	7,551	34%	3,456	16%	**22,219**
Indigenous Sarawak	2,782	10%	9,417	34%	10,211	37%	5,239	19%	**27,649**
Orang Asli (Peninsular)	201	15%	407	30%	430	31%	332	24%	**1,370**
Others	394	10%	1,445	38%	1,312	34%	661	17%	**3,812**
State									
Johor	2,429	8%	9,972	34%	10,176	35%	6,337	22%	**28,914**
Kedah	4,549	8%	19,927	35%	20,526	36%	11,661	21%	**56,663**
Kelantan	2,674	7%	17,423	48%	10,996	30%	5,340	15%	**36,433**
Melaka	889	7%	4,029	30%	5,076	37%	3,612	27%	**13,606**
Negeri Sembilan	1,740	8%	7,388	33%	8,185	37%	4,944	22%	**22,257**
Pahang	679	7%	3,157	32%	3,705	38%	2,313	23%	**9,854**
Pulau Pinang	2,846	10%	11,701	43%	8,649	32%	3,971	15%	**27,167**
Perak	3,108	9%	13,653	38%	12,742	35%	6,791	19%	**36,294**
Perlis	535	9%	2,134	35%	2,174	35%	1,306	21%	**6,149**
Selangor	1,471	8%	6,485	34%	6,660	35%	4,280	23%	**18,896**
Terengganu	733	6%	3,647	30%	5,239	42%	2,720	22%	**12,339**
Sabah	3,359	11%	11,597	39%	9,951	34%	4,575	16%	**29,482**
Sarawak	5,782	10%	20,641	37%	19,840	36%	9,309	17%	**55,572**
W.P. Kuala Lumpur	552	8%	2,281	33%	2,416	35%	1,590	23%	**6,839**
W.P. Labuan	31	10%	99	33%	114	38%	60	20%	**304**
W.P. Putrajaya	16	4%	101	28%	138	38%	108	30%	**363**

Obesity = BMI ≥ 30

Table 7: Prevalence of Physical Activity (Based on MET Score) among PeKa B40 Beneficiaries

Characteristics	Level of Physical Activity						
	Active		Minimally Active		Inactive		Total
Overall	**2,629**	**0.7%**	**343,265**	**95.1%**	**15,238**	**4.2%**	**361,132**
Gender							
Male	1,326	0.9%	143,850	94.8%	6,603	4.4%	**151,779**
Female	1,303	0.6%	199,415	95.3%	8,635	4.1%	**209,353**
Age Group							
40 - 49	411	1.0%	36,899	94.0%	1,948	5.0%	**39,258**
50 - 59	770	0.8%	88,987	94.8%	4,155	4.4%	**93,912**
60 - 69	1,102	0.7%	144,176	95.2%	6,230	4.1%	**151,508**
70 and above	346	0.5%	73,203	95.7%	2,905	3.8%	**76,454**
Ethnicity							
Malay	1,212	0.7%	171,875	96.4%	5,240	2.9%	**178,327**
Chinese	422	0.5%	84,943	96.4%	2,761	3.1%	**88,126**
Indian	326	0.8%	35,105	88.6%	4,198	10.6%	**39,629**
Indigenous Sabah	187	0.8%	21,063	94.8%	969	4.4%	**22,219**
Indigenous Sarawak	435	1.6%	25,311	91.5%	1,903	6.9%	**27,649**
Orang Asli (Peninsular)	9	0.7%	1,343	98.0%	18	1.3%	**1,370**
Others	38	1.0%	3,625	95.1%	149	3.9%	**3,812**
State							
Johor	100	0.3%	27,510	95.1%	1,304	4.5%	**28,914**
Kedah	446	0.8%	54,781	96.7%	1,436	2.5%	**56,663**
Kelantan	187	0.5%	35,544	97.6%	702	1.9%	**36,433**
Melaka	38	0.3%	13,400	98.5%	168	1.2%	**13,606**
Negeri Sembilan	311	1.4%	21,131	94.9%	815	3.7%	**22,257**
Pahang	30	0.3%	9,545	96.9%	279	2.8%	**9,854**
Pulau Pinang	78	0.3%	22,712	83.6%	4,377	16.1%	**27,167**
Perak	383	1.1%	35,164	96.9%	747	2.1%	**36,294**
Perlis	25	0.4%	6,054	98.5%	70	1.1%	**6,149**
Selangor	90	0.5%	18,123	95.9%	683	3.6%	**18,896**
Terengganu	49	0.4%	12,087	98.0%	203	1.6%	**12,339**
Sabah	232	0.8%	27,763	94.2%	1,487	5.0%	**29,482**
Sarawak	617	1.1%	52,146	93.8%	2,809	5.1%	**55,572**
W.P. Kuala Lumpur	42	0.6%	6,643	97.1%	154	2.3%	**6,839**
W.P. Labuan	0	0.0%	303	99.7%	1	0.3%	**304**
W.P. Putrajaya	1	0.3%	359	98.9%	3	0.8%	**363**

Table 8: Prevalence of Current Smokers Among PeKa B40 Beneficiaries

Characteristics	Current Smokers				
	Yes	%	No	%	Total
Overall	**37,413**	**10%**	**323,719**	**90%**	**361,132**
Gender					
Male	35,950	24%	115,829	76%	**151,779**
Female	1,463	1%	207,890	99%	**209,353**
Age Group					
40 - 49	5,457	14%	33,801	86%	**39,258**
50 - 59	11,513	12%	82,399	88%	**93,912**
60 - 69	14,746	10%	136,762	90%	**151,508**
70 and above	5,697	7%	70,757	93%	**76,454**
Ethnicity					
Malay	20,922	12%	157,405	88%	**178,327**
Chinese	7,602	9%	80,524	91%	**88,126**
Indian	3,184	8%	36,445	92%	**39,629**
Indigenous Sabah	2,787	13%	19,432	87%	**22,219**
Indigenous Sarawak	2,227	8%	25,422	92%	**27,649**
Orang Asli (Peninsular)	309	23%	1,061	77%	**1,370**
Others	382	10%	3,430	90%	**3,812**
State					
Johor	2,889	10%	26,025	90%	**28,914**
Kedah	6,423	11%	50,240	89%	**56,663**
Kelantan	3,606	10%	32,827	90%	**36,433**
Melaka	1,555	11%	12,051	89%	**13,606**
Negeri Sembilan	2,446	11%	19,811	89%	**22,257**
Pahang	1,190	12%	8,664	88%	**9,854**
Pulau Pinang	2,501	9%	24,666	91%	**27,167**
Perak	3,812	11%	32,482	89%	**36,294**
Perlis	639	10%	5,510	90%	**6,149**
Selangor	1,971	10%	16,925	90%	**18,896**
Terengganu	1,264	10%	11,075	90%	**12,339**
Sabah	3,561	12%	25,921	88%	**29,482**
Sarawak	4,711	8%	50,861	92%	**55,572**
W.P. Kuala Lumpur	765	11%	6,074	89%	**6,839**
W.P. Labuan	29	10%	275	90%	**304**
W.P. Putrajaya	51	14%	312	86%	**363**

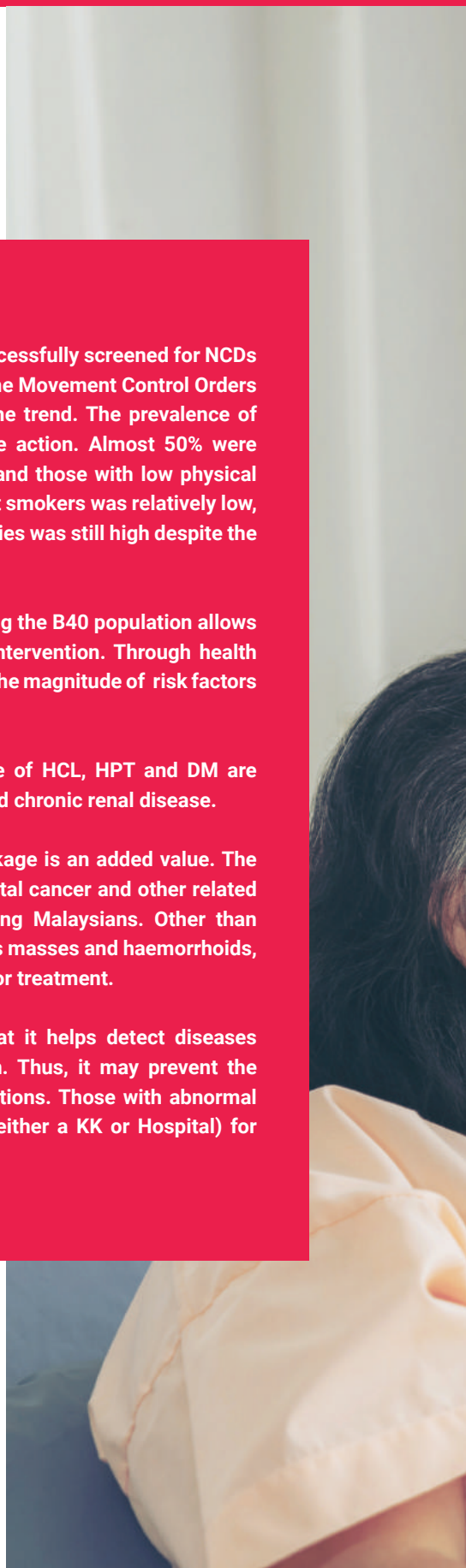
4.9 Summary

Over the period of one year and nine months, the scheme had successfully screened 457,462 beneficiaries. Since the start of this scheme, the trend was increasing in terms of the number of beneficiaries being screened monthly until the interruption by the MCO due to the COVID-19 pandemic. Based on past medical history, the common existing NCDs among the beneficiaries were HPT (57%), HCL (43%) and DM (32%). About 1% of the beneficiaries were having some form of mental illness.

In terms of risk factors, high prevalence of current smokers among males, although the overall prevalence was relatively low. The rate of obesity with a BMI of 30 and above was high, especially among females and the younger age group. A higher rate of low BMI of below 20, possibly an indication of malnourishment, among the elderly aged 70 and above.

Having the DRE and CBE in the health screening package is an added value. DRE yields about 0.6% abnormal findings.

Almost 48% of women have at least one risk factor for breast cancer, and CBE yields about 1.8% of abnormal findings among those with risk factors that need further investigation.



Highlights

Since the start of the PeKa B40 scheme, it has successfully screened for NCDs of 10% (457,462) of the BSH population, despite the Movement Control Orders due to the COVID-19 pandemic which affected the trend. The prevalence of lifestyle-related risk factors calls for interventive action. Almost 50% were obese, with a higher prevalence among females and those with low physical activity. Although the overall prevalence of current smokers was relatively low, the number of smokers among the male beneficiaries was still high despite the high cigarette cost.

Understanding the magnitude of risk factors among the B40 population allows better planning, policy-making and customised intervention. Through health screening, we now have a better understanding of the magnitude of risk factors and NCDs among the B40 population.

Similar to the general population, the prevalence of HCL, HPT and DM are among the most common NCDs and about 13% had chronic renal disease.

Having DRE and CBE in the health screening package is an added value. The aim is for the early detection of breast cancer, rectal cancer and other related abnormalities. These are common cancers among Malaysians. Other than cancers, DRE also detects other conditions such as masses and haemorrhoids, which need further clinical assessment and plan for treatment.

The value of having this health screening is that it helps detect diseases at early stages and allows for early intervention. Thus, it may prevent the progression of disease into undesirable complications. Those with abnormal findings were referred to a government facility (either a KK or Hospital) for further assessment and treatment.

CHAPTER 5: BENEFIT 2 - HEALTH AID (HA)

5.1 Introduction

There are ten types of HA categories covered under the PeKa B40 scheme. It can be further sub-categorised into surgical and non-surgical items:

1) Surgical items

a) Cardiac stent
b) Intraocular lens (IOL)
c) Joint arthroplasty
d) Limb prosthesis and orthosis (certain list of items)
e) Pacemaker
f) Spinal surgery prosthesis and implant

2) Non-surgical items

a) Breathing machine and oxygen concentrator
b) Hearing aid
c) Limb prosthesis and orthosis (certain list of items)
d) Nutritional support
e) Wheelchair

5.2 Trend of HA Applications

The trend of HA applications was increasing till March 2020. The trend began to decrease dramatically, mainly contributed by the MCO due to the COVID-19 pandemic. However, the trend started to gradually pick up again after the end of the MCO in June 2020 (refer to Figure 8).

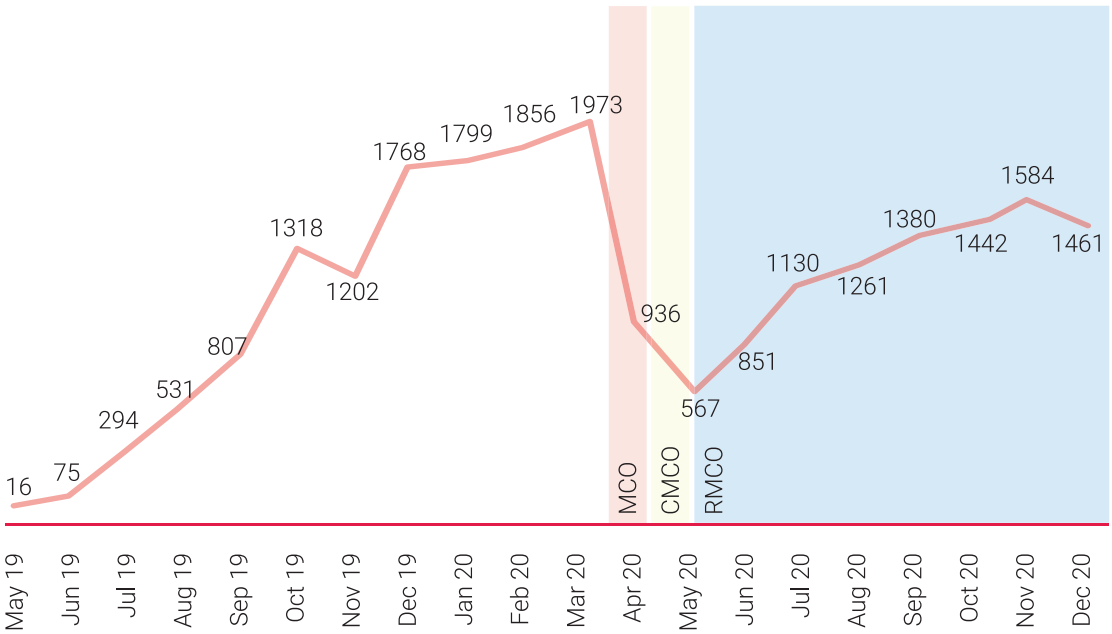


Figure 8: The Overall Trend of HA Application

5.3 HA Application by Item Type

A total of 22,251 HA applications were received between that period, with a total of 18,623 (83.7%) applications with quotations approved (status awarded). IOL contributed to nearly half (43.5%) of the total applications, followed by hearing aid and cardiac stents, with 19.0% and 10.7%, respectively (refer to Table 9).

Table 9: Types of HA and Number of Applications Awarded by Year

Health Aid Types	All application				Quotation Awarded			
	2019	2020	Total	Total Percentage	2019	2020	Total	Total Percentage
Intraocular lens	2,539	7,134	9,673	43.5	2,487	6,042	8,529	45.8
Hearing aid	947	3,291	4,238	19.0	898	2,638	3,536	19.0
Cardiac stent	942	1,436	2,378	10.7	886	988	1,874	10.1
Joint arthroplasty	527	1,146	1,673	7.5	473	858	1,331	7.2
Wheelchair	337	1,013	1,350	6.1	290	762	1,052	5.7
Limb prosthesis and orthosis	295	791	1,086	4.9	278	626	904	4.9
Nutritional support	152	616	768	3.5	130	441	571	3.1
Breathing machines & Oxygen concentrator	113	497	610	2.7	97	336	433	2.3
Spinal surgery prosthesis and implant	87	159	246	1.1	78	136	214	1.2
Pacemaker	72	157	229	1.0	67	112	179	1.0
Total	**6,011**	**16,240**	**22,251**	**100.0**	**5,684**	**12,939**	**18,623**	**100.0**

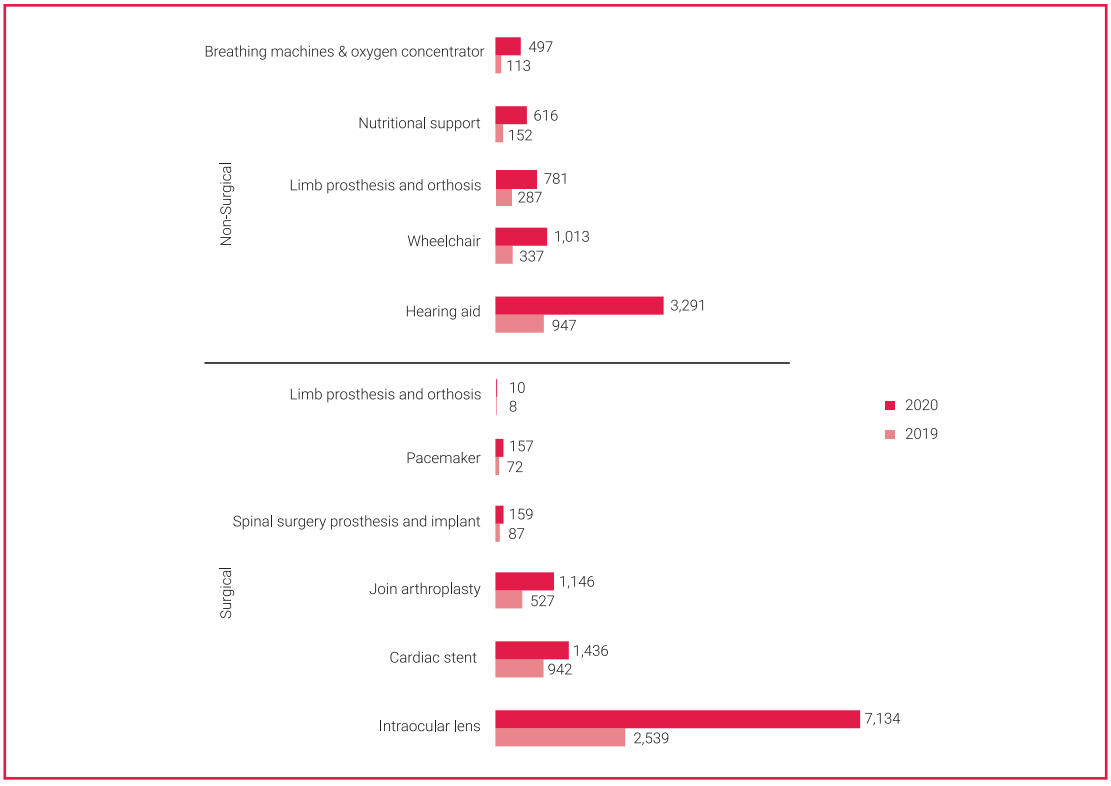
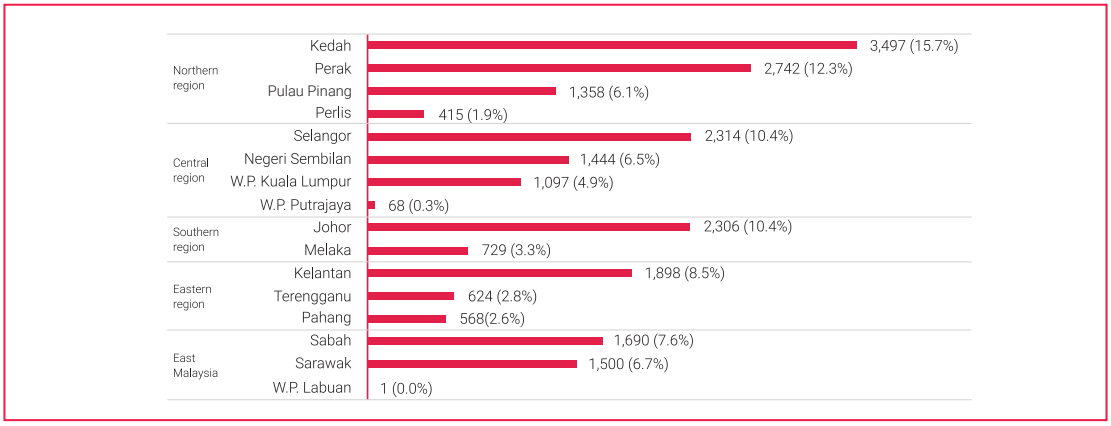


Figure 9: HA Application by Treatment Type

5.4 Hospitals Utilising HA Benefit by State

The highest percentage of HA applications were from the Northern region (36.0%), which majority were from Kedah and Perak, with 15.7% and 12.3% of total applications, respectively. Meanwhile, 22.1% of total applications were from the Central Region, with Selangor recording the highest applications (10.4% of total). 14.3% of total applications were from East Malaysia, of which 7.6% were from Sabah, and 6.7% were from Sarawak. 13.9% of total applications were from the Eastern region, with Kelantan recording the highest number of applications (8.5%). Lastly, 13.6% of the total application were from the Southern region, of which the majority of applications were from Johor (10.4%) (refer to Figure 10).

Overall, the top 5 states which utilised the HA were:
1. Kedah (15.7%)
2. Perak (12.3%)
3. Selangor (10.4%)
4. Johor (10.4%)
5. Kelantan (8.5%)



Number of HA Application by Region and State

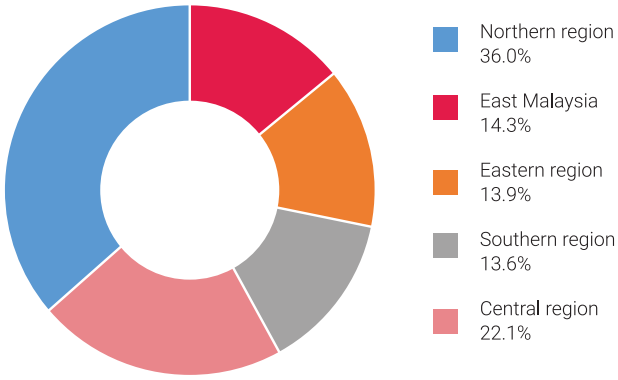


Figure 10: Percentage of HA Application by Region and State

5.5 Summary

Since the start of the PeKa B40 scheme, the trend of HA applications has been increasing. The most common HA application was IOL, followed by hearing aid and cardiac stent. Furthermore, the trend of HA applications was largely affected by the COVID-19 pandemic. There was geographical variation in the HA applications where hospitals in the Northern region had higher utilisation of this benefit.

The greatest achievement was that ProtectHealth successfully negotiated the lowering and standardisation of DES, which saved a significant amount of the PeKa B40 budget. The total cost paid for HA during this period was about RM20.9 million.

Highlights

The provision of HA to the B40 population has crucial benefits and utilised the second biggest proportion of the budget. There is a wide range of HAs covered under PeKa B40, including most HA needs.

Initially, there was an increasing number of applications, but eventually the trend was very much affected by the MCO due to the pandemic.

There was a high number of applications for IOL, hearing aid and cardiac stent. This may be related to the ageing population and may also align with the high prevalence of NCDs. For example, the elderly who are diabetic are more susceptible to having cataracts.

CHAPTER 6: BENEFIT 3 - COMPLETING CANCER TREATMENT INCENTIVE (CCTI)

6.1 Introduction

This chapter will describe the achievement of the CCTI. CCTI is aimed to encourage beneficiaries to complete treatment. The incentive is given in two split payments with a maximum of RM1,000 per beneficiary and cancer type. If an individual has two types of unrelated cancers, he/she is eligible for two claims. The first payment of RM300 will be given at the initial phase, whilst the second payment of RM700 is given after at least two visits in the course of nine months.

6.2 Trend of CCTI Applications

The total applications for CCTI were 5,357, of which 4,258 applications were approved. In terms of individual beneficiaries, 4,326 beneficiaries (individuals) applied for CCTI, whereby 3,396 (78.5%) were approved where else the remaining percentage of beneficiaries are under review due to incomplete documentation.

The trend of CCTI applications followed the number of HS done where there was an exponential rise in the number of applications, with the peak from November 2019 to January 2020 but later dropped coincidentally with the MCO period (refer to Figure 11).

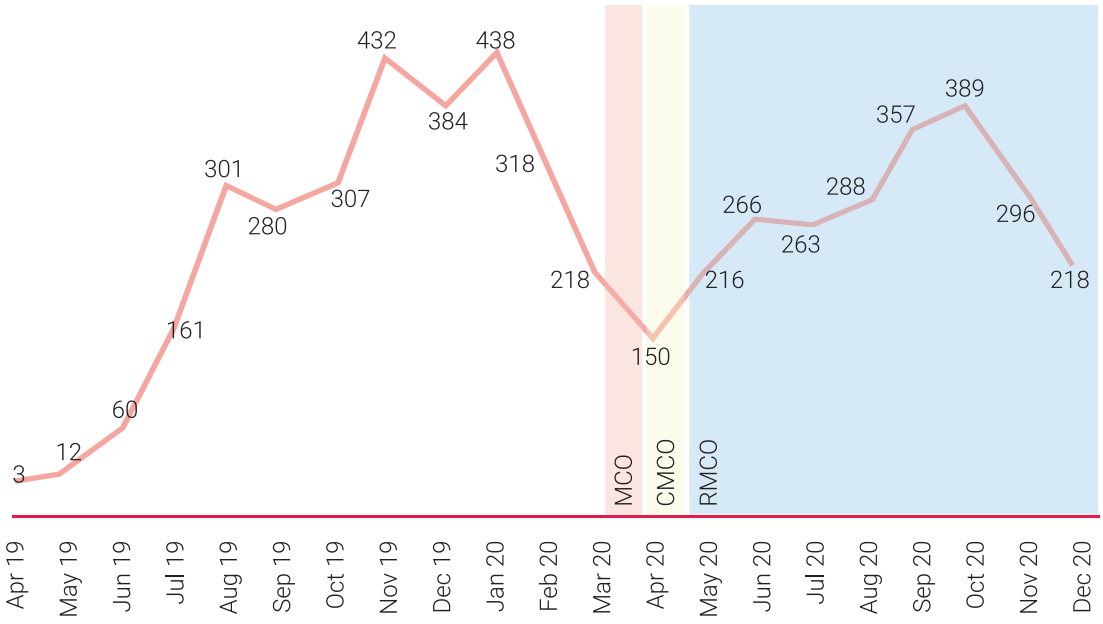


Figure 11: Monthly Trend of CCTI Applications

6.3 Socio-Demographic of CCTI Applicants

The socio-demographic characteristics for CCTI applicants were almost similar to the overall characteristics of PeKa B40 beneficiaries. The striking difference in CCTI applicants compared to the overall characteristics is the gender ratio. The general characteristics show that the gender ratio among CCTI applicants was 1:2 for the male to female ratio (refer to Table 10). This is further shown in the types of cancer, where the top two are female-related cancers (refer to Table 11).

Table 10: Socio-Demographic Characteristics of CCTI Recipients

Characteristics	Applications			Approved		
	Applications	Beneficiaries	%*	Applications	Beneficiaries	%**
Gender						
Male	1,721	1,393	32.2	1,404	1,120	25.9
Female	3,636	2,933	67.8	2,854	2,276	52.6
Age group						
40-49	409	369	8.5	306	272	6.3
50-59	1,695	1,372	31.7	1,398	1,128	26.1
60-69	2,214	1,769	40.9	1,769	1,399	32.3
70 and above	1039	816	18.9	785	597	13.8
Ethnicity						
Malay	2,461	1,957	45.2	2,043	1,590	36.8
Chinese	1096	858	19.8	861	667	15.4
Indian	460	367	8.5	345	273	6.3
Indigenous Sabah	969	837	19.3	700	616	14.2
Indigenous Sarawak	259	222	5.1	223	188	4.3
Orang Asli (Peninsular)	9	6	0.1	8	5	0.1
Others	103	79	1.8	78	57	1.3
State						
Johor	319	230	5.3	279	196	4.5
Kedah	798	656	15.2	664	534	12.3
Kelantan	183	148	3.4	162	130	3.0
Melaka	316	239	5.5	282	212	4.9
Negeri Sembilan	287	241	5.6	227	187	4.3
Pahang	139	120	2.8	121	106	2.5
Pulau Pinang	170	141	3.3	158	131	3.0
Perak	404	318	7.4	344	263	6.1
Perlis	54	43	1.0	42	33	0.8
Selangor	433	324	7.5	284	202	4.7
Terengganu	118	86	2.0	101	71	1.6
Sabah	1,288	1,101	25.5	902	784	18.1
Sarawak	581	475	11.0	525	421	9.7
W.P. Kuala Lumpur	215	163	3.8	127	95	2.2
W.P. Labuan	45	36	0.8	38	30	0.7
W.P. Putrajaya	7	5	0.1	2	1	0.0

Total beneficiaries = 457, 462
Total CCTI applications = 5,357
Total CCTI approved applications = 4,258

% Percentage of beneficiaries applied for CCTI*
*%** Percentage of beneficiaries with approved CCTI application*

6.4 Common Cancers Among CCTI Beneficiaries

Table 11 shows the types of cancer among CCTI recipients. The cancer types were grouped according to the ICD-10 cancer groupings. The most common type of cancer group was breast cancer, which accounts for 24.7% of cancer, followed by the female genital group (24.2%) and digestive cancer group (19.0%).

Table 11: Types of Cancer Among CCTI Beneficiaries

Cancer Group	Number of applications	%
Breast	1,323	24.7%
Female genital	1,296	24.2%
Digestive	1,017	19.0%
Lymphoid, Haematopoietic & related tissues	427	8.0%
ENT	382	7.1%
Respiratory	370	6.9%
Male genital	152	2.8%
Thyroid & Endocrine glands	119	2.2%
Urinary tract	93	1.7%
Mesothelial & Soft tissue	54	1.0%
Others	44	0.8%
Skin	41	0.8%
Secondary neoplasms	24	0.4%
Bone	15	0.3%
Total	**5,357**	**100.0%**

6.5 Cancer Stage

Figure 12 shows the different stages of cancer of the CCTI applicants. 32% of beneficiaries applied were those already in stage IV, followed by stage III (23%), stage II (19%), stage I (14%) and unknown stage (13%).

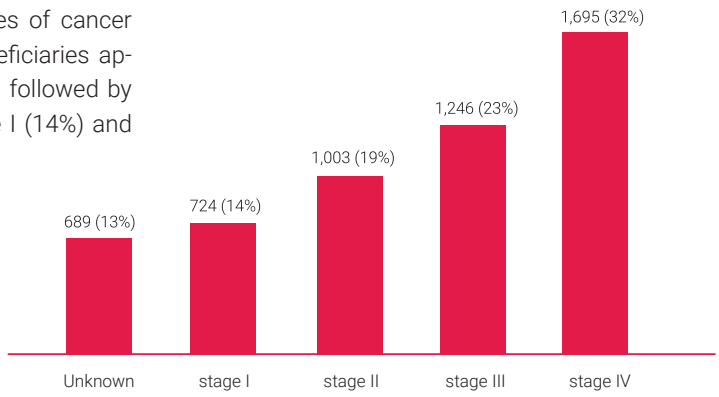


Figure 12: Number of CCTI Applications According to Cancer Stage

* Note: Unknown due to missing info from BMS

6.6 Types of Cancer Treatments

Table 12 shows the types of treatment applied by the beneficiaries. Most of the beneficiaries received more than one type of cancer treatment. The most common type of treatment was chemotherapy (37.9%), followed by surgery (28.3%) and radiotherapy (13.5%).

Table 12: Types of Cancer Treatment

Treatment type	No. of CCTI Beneficiaries	% of cancer treatment out of total CCTI beneficiaries
Chemotherapy	1,639	37.9%
Surgery	1,224	28.3%
Radiotherapy	583	13.5%
Others	525	12.1%
Hormonal drug therapy	256	5.9%
Targeted therapy	41	0.9%
Brachytherapy	31	0.7%
Radioiodine therapy	27	0.6%
Total	**4,326**	**100.0%**

6.7 Summary

Similar to other benefits, the trend of CCTI application was initially increasing, but the MCO, due to the COVID-19 pandemic affected the number of applicants. The number of female applicants was more than male applicants, with a ratio of almost 2:1, as the top cancer types were primarily female cancers, i.e. breast cancer and female genital cancers. Geographically, based on provider states, Sabah and Kedah had the highest CCTI applications.

Highlights

CCTI is an incentive that gives a maximum of RM1,000 per beneficiaries according to cancer type. Over 4,326 beneficiaries have applied for CCTI and 3,396 (78.5%) were approved. The most common cancer among CCTI beneficiaries is breast cancer. *Hospital Wanita dan Kanak-Kanak, Likas* has the highest number of CCTI applications (1,180 applications).

Together, Benefit 3 and Benefit 4 aim to encourage those with cancers to comply with their treatment schedule. These incentives will ease the economic burden of the family during the course of treatment. Ultimately, with better compliance to treatment, it may improve the survival rate.

CHAPTER 7: BENEFIT 4 - TRANSPORT INCENTIVE (TI)

7.1 Introduction

This chapter will highlight the statistics of TI by looking at the trend of TI applications, the socio-demographic characteristics of the beneficiaries, their geographical distribution and the pay-out.

Packaged with HA and CCTI is TI. This is to increase compliance with treatment. The transportation cost could be challenging for the B40 population, especially if they live in remote areas. The limit for TI claim in Peninsular Malaysia is RM500 per person per diagnosis, while Sabah, Sarawak and WP Labuan's limit is RM1,000.

7.2 Trend of TI Applications

Total application for TI was 15,956, of which 14,192 applications were approved. A total of 8,667 beneficiaries (individuals) applied for TI, where 7,766 (89.6%) were approved. The TI application trend followed the number of HA and CCTI done, where there was an exponential rise in the number of applications with the peak from September 2019 to December 2019 and later dropped when approaching the MCO period (refer to Figure 13).

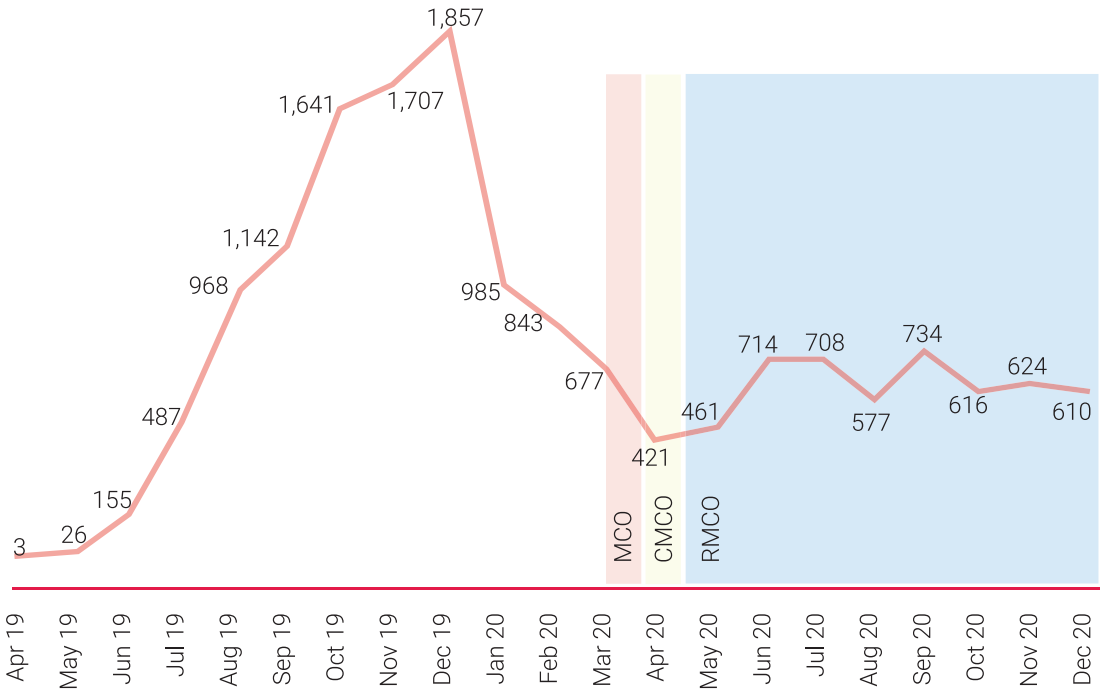


Figure 13: Monthly Trend of TI Applications

7.3 Socio-Demographic of TI Applications

The socio-demographic characteristics for TI beneficiaries (refer to Table 13) are similar to the overall characteristics of PeKa B40 beneficiaries.

Table 13: Socio-Demographic Characteristics of TI Applications

Characteristics	Applications			Approved		
	Applications	Beneficiaries	%*	Applications	Beneficiaries	%**
Gender						
Male	6,391	3,709	42.8	5,843	3,435	39.6
Female	9,565	4,958	57.2	8,349	4,331	50.0
Age Group						
40-49	832	395	4.6	661	300	3.5
50-59	4,512	2,270	26.2	4,023	2,032	23.4
60-69	6,955	3,679	42.4	6,231	3,326	38.4
70 and above	3657	2,323	26.8	3,277	2,108	24.3
Ethnicity						
Malay	7,405	4,165	48.1	6,765	3,806	43.9
Chinese	3,426	1860	21.5	3,076	1,677	19.3
Indian	1,544	1102	12.7	1,425	1,017	11.7
Indigenous Sabah	2,694	1124	13.0	2,141	906	10.5
Indigenous Sarawak	581	264	3.0	518	229	2.6
Orang Asli (Peninsular)	13	8	0.1	11	7	0.1
Others	293	144	1.7	256	124	1.4
State						
Johor	797	491	5.7	756	458	5.3
Kedah	3,081	1,610	18.6	2,758	1,487	17.2
Kelantan	523	400	4.6	497	381	4.4
Melaka	907	362	4.2	854	335	3.9
Negeri Sembilan	676	495	5.7	614	441	
Pahang	296	193	2.2	280	179	
Pulau Pinang	724	432	5.0	710	422	4.9
Perak	1,631	1,073	12.4	1,540	1,017	11.7
Perlis	214	129	1.5	188	119	1.4
Selangor	1,121	770	8.9	970	654	7.5
Terengganu	338	203	2.3	321	188	2.2
Sabah	3,598	1,561	18.0	2,810	1,247	14.4
Sarawak	1,500	612	7.1	1,404	557	6.4
W.P. Kuala Lumpur	460	288	3.3	415	243	2.8
W.P. Labuan	81	41	0.5	71	35	0.4
W.P. Putrajaya	9	7	0.1	4	3	0.0

Total beneficiaries = 457, 462
Total TI applications = 15,956
Total TI approved applications = 14,192

% Percentage of beneficiaries applied for TI*
*%** Percentage of beneficiaries whose TI application has been approved*

7.4 Number of TI by Category

A total of 8,667 beneficiaries benefited from TI, where 4,386 beneficiaries were among HA recipients, 4,262 beneficiaries from CCTI recipients, and 19 beneficiaries from both HA and CCTI benefits groups. In terms of the number of applications, there was a slightly higher number among CCTI recipients compared to HA as expected, due to the multiple follow-ups for cancer treatment and the automatic applications of TI when beneficiaries applied for CCTI. In contrast, TI for HA recipients must be preceded with the approval of HA benefit before applying for the TI benefit.

Table 14: Number of TI by Category

Category	Applications			Approved		
	Applications	Beneficiaries	%	Applications	Beneficiaries	%
CCTI	10,730	4,262	49.2%	8,975	3,367	43.4%
HA	5,167	4,386	50.6%	5,158	4,380	56.4%
Both	59	19	0.2%	59	19	0.2%
Total	**15,956**	**8,667**	**100.0%**	**14,192**	**7,766**	**100.0%**

Applications=total claims
Beneficiaries=total individuals

7.5. Number of TI Payouts to Beneficiaries

Figure 14 shows the number of TI payouts per beneficiary. The beneficiaries are eligible to claim for multiple visits to the hospital as long as the ceiling limit of RM500 for Peninsular Malaysia and RM1,000 for East Malaysia is not exceeded. Up to 28.8% (2,499) of TI beneficiaries have received payout 2-5 times, 3.3% (283) beneficiaries received payout 6-10 times, and 1.0% (87) beneficiaries received more than 10 TI payouts. The remaining 66.9% (5,798) of beneficiaries have received TI once.

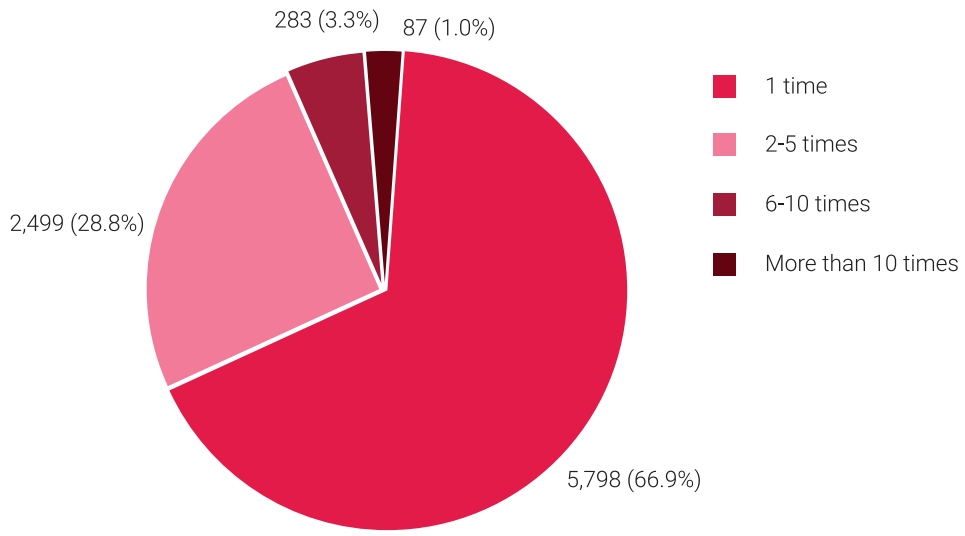


Figure 14: Number of TI Payouts for Beneficiaries

7.6 Summary

As TI benefit is packaged with HA and CCTI, the trend was equally affected by the MCO due to the COVID-19 pandemic. In terms of geographical distribution based on the providers' state, Sabah and Kedah had the highest utilisation of transport incentive, consistent with a high number of CCTI from these states. In terms of total pay-out, more than 50% of beneficiaries received TI only once.

Highlights

Transport Incentive (TI) is an incentive given to HA and CCTI beneficiaries to complete their treatment. The limit for TI claim in Peninsular Malaysia is RM500 per person per diagnosis, while Sabah, Sarawak and WP Labuan's limit is RM1,000. Over 8,667 beneficiaries applied for TI, where 7,766 (89.6%) were approved. The highest percentage of TI claims were made by beneficiaries with the CCTI benefit as compared to those with the HA benefit. *Hospital Wanita dan Kanak-Kanak, Likas* showed the highest number of TI applications (2,904 applications).

CHAPTER 8: NON-COMMUNICABLE DISEASE (NCD)

8.1 Introduction

This chapter discusses the main objective of the PeKa B40 scheme, which is the detection of NCDs with the main focus on DM, HPT, HCL, anxiety and depression.These diseases may already be present during the health screening. However, the primary goal is to detect those who were not priorly diagnosed so that early intervention can be offered.

In addition to history taking and physical examination, the diagnosis is based on lab investigation and validated diagnostic tools, i.e., GAD for diagnosing anxiety and PHQ for diagnosing depression.

8.2 Diabetes Mellitus (DM)

Newly diagnosed DM is defined as having an HbA1c level ≥ 6.3% with no known history of DM. The prevalence[1] of DM among the beneficiaries was 42.0% (n=151,343), of which 10.4% (n=37,425) were newly diagnosed DM and 31.6% (n=113,918) were existing DM (refer to Table 15).

Socio-Demographic Characteristic of DM Cases

There was no apparent variation in the prevalence of existing DM and newly diagnosed DM among males and females. The ratio of newly diagnosed to existing DM was 1:3. The younger age group (40–50 years old) showed a lower prevalence of existing DM (19.6%) than the older age group, with a prevalence of more than 29%. However, there was no gross variation for the prevalence of newly diagnosed DM across age groups, with the prevalence between 9.0% and 11.5% (refer to Table 15).

Indians showed the highest prevalence of existing DM (46.6%), followed by the Malays (35.1%) and Indigenous Sarawak (24.4%). The lowest prevalence was among the Orang Asli (Peninsular), with a prevalence of 10.6% (refer to Table 15).

Indian ethnics also showed the highest prevalence of newly diagnosed DM (12.9%), followed by the Indigenous Sarawak (11.8%) and the Malays (10.5%). Like existing DM, prevalence among the Orang Asli (Peninsular) was the lowest (6.3%), followed by the Chinese (9.2%) (refer to Table 15).

[1]*Prevalence is defined as the percentage of cases per total beneficiaries.*

Table 15: Socio-Demographic Backgrounds of Beneficiaries with DM

Characteristics	Total beneficiaries	Existing DM		Newly diagnosed DM	
		Number	% *	Number	% *
Gender					
Male	151,367	46,223	30.5	15,989	10.6
Female	208,836	67,695	32.4	21,436	10.3
Age group					
40-49	39,147	7,689	19.6	4,189	10.7
50-59	93,673	27,385	29.2	10,764	11.5
60-69	151,157	53,596	35.5	15,586	10.3
70 and above	76,226	25,248	33.1	6,886	9.0
Ethnicity					
Malay	177,820	62,475	35.1	18,584	10.5
Chinese	87,985	21,309	24.2	8,081	9.2
Indian	39,484	18,416	46.6	5,075	12.9
Indigenous Sabah	22,181	3,850	17.4	1,983	8.9
Indigenous Sarawak	27,609	6,749	24.4	3,253	11.8
Orang Asli (Peninsular)	1,317	139	10.6	83	6.3
Others	3,807	980	25.7	366	9.6
State					
Johor	28,788	10,901	37.9	2,751	9.6
Kedah	56,522	20,529	36.3	6,047	10.7
Kelantan	36,338	11,265	31.0	3,914	10.8
Melaka	13,577	5,550	40.9	1,200	8.8
Negeri Sembilan	22,130	8,017	36.2	2,212	10.0
Pahang	9,833	3,293	33.5	1,134	11.5
Pulau Pinang	27,131	7,741	28.5	2,861	10.5
Perak	36,185	11,986	33.1	3,748	10.4
Perlis	6,149	2,408	39.2	592	9.6
Selangor	18,826	6,395	34.0	2,385	12.7
Terengganu	12,305	4,824	39.2	1,198	9.7
Sabah	29,437	5,263	17.9	2,683	9.1
Sarawak	55,509	12,987	23.4	5,858	10.6
W.P. Kuala Lumpur	6,807	2,543	37.4	782	11.5
W.P. Labuan	304	76	25.0	23	7.6
W.P. Putrajaya	362	140	38.7	37	10.2

Total beneficiaries with HbA1c result = 360,203
Total existing DM = 113,918 (31.6%)
Total newly diagnosed DM = 37,425 (10.4%)

**% is out of total beneficiaries with HbA1c result, cases with missing HbA1c values are excluded*

The Associated Risk Factors with DM

The significant association between the risk factors (categorical independent variables) and the presence of DM was tested by the chi-square test. It showed a significant association for all the variables with a p-value of <0.01 (refer to Table 16). The association with smoking and alcohol was inconclusive.

Table 16: DM and the Associated Risk Factors Among PeKa B40 Beneficiaries

Risk Factors	Diabetes Mellitus			
	No DM	With DM	X^2	*P*
Family history				
Negative	176,171	92,747	25,000.00	<0.01
Positive	32,689	58,596		
Gender				
Male	89,155	62,212	25,000.00	<0.01
Female	119,705	89,131		
Age group				
40-49	27,269	11,878	3,100.00	<0.01
50-59	55,524	38,149		
60-69	81,975	69,182		
70 and above	44,092	32,134		
Smoking history				
Non-smoker	184,850	138,050	695.40	Inconclusive
Smoker	24,010	13,293		
Alcohol intake				
Non-alcohol drinker	197,872	144,868	183.70	Inconclusive
Alcohol drinker	10,988	6,475		
Physical activity				
Active	1,599	1,013	30.20	<0.01
Minimally active	198,707	143,679		
Inactive	8,554	6,651		
BMI Group				
<20	24,113	7,179	13,000.00	<0.01
20-24	86,016	47,871		
25-29	68,340	57,951		
30+	30,391	38,342		

**Including newly diagnosed and existing cases*

Table 17: The Statistical Analysis of HbA1c Level

Characteristics	Existing (n = 113,918)							Newly diagnosed (n = 37,425)						
	N	min	max	mean	sd	median	iqr	N	min	max	mean	sd	median	iqr
Gender														
Male	46,223	3.3	21.3	7.783	2.067	7.20	2.60	15,989	6.3	19.2	7.443	1.718	6.70	1.20
Female	67,695	3.4	20.9	7.975	2.150	7.30	2.90	21,436	6.3	18.9	7.382	1.696	6.70	1.10
Age group														
40-49	7,689	3.6	21.3	8.767	2.392	8.40	3.70	4,189	6.3	18.0	7.814	1.975	6.90	2.10
50-59	27,385	3.4	20.9	8.428	2.305	7.90	3.40	10,764	6.3	19.2	7.644	1.910	6.80	1.60
60-69	53,596	3.3	21.3	7.826	2.024	7.20	2.60	15,586	6.3	18.9	7.303	1.589	6.60	1.00
70 and above	25,248	3.4	20.2	7.208	1.740	6.70	1.90	6,886	6.3	17.4	7.028	1.289	6.60	0.60
Ethnicity														
Malay	62,475	3.3	21.3	8.095	2.227	7.50	3.10	18,584	6.3	19.2	7.531	1.822	6.70	1.30
Chinese	21,309	3.8	17.6	7.218	1.600	6.70	1.80	8,081	6.3	17.3	7.079	1.337	6.60	0.70
Indian	18,416	3.4	19.8	8.348	2.149	7.80	3.10	5,075	6.3	18.0	7.562	1.750	6.80	1.50
Indigenous Sabah	3,850	4.1	21.3	7.492	2.090	6.80	2.50	1,983	6.3	16.2	7.519	1.797	6.70	1.40
Indigenous Sarawak	6,749	3.9	20.6	7.283	1.792	6.70	1.80	3,253	6.3	18.9	7.200	1.548	6.60	0.80
Orang Asli (Peninsular)	139	4.5	15.4	7.105	2.050	6.40	2.10	83	6.3	13.6	7.601	1.761	6.90	1.60
Others	980	4.4	17.2	7.489	1.928	6.90	2.30	366	6.3	18.6	7.455	1.866	6.60	1.10
State														
Johor	10,901	3.4	17.6	7.907	2.057	7.30	2.70	2,751	6.3	16.9	7.404	1.697	6.70	1.10
Kedah	20,529	3.4	20.6	8.125	2.209	7.50	3.10	6,047	6.3	19.2	7.462	1.725	6.70	1.30
Kelantan	11,265	4.0	20.2	8.505	2.384	7.90	3.60	3,914	6.3	17.8	7.600	1.850	6.80	1.50
Melaka	5,550	4.3	16.7	7.787	1.902	7.30	2.60	1,200	6.3	17.3	7.331	1.674	6.60	0.90
Negeri Sembilan	8,017	4.0	17.9	7.827	2.072	7.20	2.60	2,212	6.3	18.8	7.302	1.621	6.60	1.00
Pahang	3,293	4.3	16.9	7.962	2.113	7.30	2.90	1,134	6.3	15.7	7.397	1.710	6.70	1.10
Pulau Pinang	7,741	3.9	21.3	7.720	1.994	7.10	2.40	2,861	6.3	16.0	7.368	1.685	6.70	1.00
Perak	11,986	3.3	20.9	7.847	2.101	7.20	2.70	3,748	6.3	18.0	7.419	1.654	6.70	1.20
Perlis	2,408	4.7	20.9	7.896	2.135	7.20	2.80	592	6.3	15.7	7.311	1.625	6.60	0.90
Selangor	6,395	3.8	16.9	7.874	2.060	7.30	2.70	2,385	6.3	15.0	7.421	1.680	6.70	1.10
Terengganu	4,824	4.2	19.7	8.208	2.233	7.60	3.10	1,198	6.3	17.8	7.525	1.872	6.70	1.30
Sabah	5,263	4.1	21.3	7.502	2.065	6.80	2.50	2,683	6.3	18.6	7.536	1.828	6.70	1.40
Sarawak	12,987	3.9	20.6	7.290	1.765	6.70	1.90	5,858	6.3	18.9	7.217	1.564	6.60	0.80
W.P. Kuala Lumpur	2,543	4.0	19.8	7.878	2.039	7.30	2.80	782	6.3	16.6	7.378	1.689	6.70	1.00
W.P. Labuan	76	4.8	14.4	7.588	2.071	6.85	2.15	23	6.3	11.6	7.322	1.638	6.50	1.10
W.P. Putrajaya	140	5.3	14.6	7.886	2.071	7.10	2.55	37	6.3	13.5	7.727	1.958	6.70	1.50

8.3 Hypertension (HPT)

Newly diagnosed HPT is defined as having systolic blood pressure of ≥ 140 and/or diastolic blood pressure of ≥ 90, with no known history of HPT. This is based on the definition in CPG.

The overall prevalence[2] of HPT among the beneficiaries was 70% (n=252,948), of which 13.8% (n=50,001) were newly diagnosed HPT and 56.2% (n=202,947) were existing HPT (refer to Table 18).

Socio-Demographic of HPT Cases

There was a slight variation in the prevalence of existing HPT and newly diagnosed HPT between males and females. The prevalence of existing HPT was slightly higher among the females (57.8%) than males (54.0%). On the other hand, the prevalence of newly diagnosed HPT was slightly higher among the males (14.6%) than females (13.3%) (refer to Table 18).

The prevalence of existing HPT increased as the age group increased. In contrast, there was a higher prevalence of newly diagnosed HPT among the younger age group, and the prevalence decreased in the older age group (refer to Table 18).

The prevalence of existing HPT was highest among indigenous Sarawak (65.0%), followed by the Malays (57.7%) and the Chinese (55.0%) ethnicity. For the newly diagnosed HPT, the highest prevalence was among the Orang Asli (20.2%), followed by other ethnicities (16.3%) and indigenous Sabah (16.0%) (refer to Table 18).

Perlis recorded the highest prevalence of existing HPT (63.2%), followed by Johor (63.1%) and Melaka (63.0%). In contrast, WP Putrajaya recorded the highest prevalence of newly diagnosed HPT (22.3%), followed by Pahang (18.0%), Sabah (16.2%), Selangor (15.7%) and Kelantan (15.3%) (refer to Table 18).

Table 18: Socio-Demographic Background of Beneficiaries with HPT

Characteristics	Total beneficiaries	Existing		Newly diagnosed	
		Number	%	Number	%
Gender	151,779	82,034	54.0	22,190	14.6
Male	209,353	120,913	57.8	27,811	13.3
Female					
Age group					
40-49	39,258	12,703	32.4	6,421	16.4
50-59	93,912	44,753	47.7	14,851	15.8
60-69	151,508	92,107	60.8	20,328	13.4
70 and above	76,454	53,384	69.8	8,401	11.0
Ethnicity					
Malay	178,327	102,941	57.7	26,076	14.6
Chinese	88,126	48,473	55.0	11,919	13.5
Indian	39,629	20,123	50.8	4,544	11.5
Indigenous Sabah	22,219	10,669	48.0	3,544	16.0
Indigenous Sarawak	27,649	17,979	65.0	3,019	10.9
Orang Asli (Peninsular)	1,370	538	39.3	277	20.2
Others	3,812	2,224	58.3	622	16.3
State					
Johor	28,914	18,243	63.1	3,517	12.2
Kedah	56,663	31,492	55.6	7,077	12.5
Kelantan	36,433	19,546	53.6	5,582	15.3
Melaka	13,606	8,578	63.0	1,577	11.6
Negeri Sembilan	22,257	12,800	57.5	3,078	13.8
Pahang	9,854	5,568	56.5	1,776	18.0
Pulau Pinang	27,167	13,646	50.2	4,082	15.0
Perak	36,294	20,812	57.3	4,750	13.1
Perlis	6,149	3,887	63.2	924	15.0
Selangor	18,896	9,483	50.2	2,958	15.7
Terengganu	12,339	7,527	61.0	1,527	12.4
Sabah	29,482	14,055	47.7	4,769	16.2
Sarawak	55,572	33,368	60.0	7,277	13.1
W.P. Kuala Lumpur	6,839	3,566	52.1	988	14.4
W.P. Labuan	304	176	57.9	38	12.5
W.P. Putrajaya	363	200	55.1	81	22.3

Total beneficiaries = 361,132
Total existing HPT = 202,947 (56.2%)
Total newly diagnosed HPT = 50,001 (13.8%)

The Associated Risk Factors with HPT

There was a significant association between HPT and risk factors of family history, age group, alcohol intake, physical activity and BMI groups. However, in this population, smoking history has no significant association with HPT. The association with smoking and alcohol was inconclusive.

Table 19: HPT and the Associated Risk Factors

Risk Factors	Hypertension			
	No HPT	With HPT*	X^2	*P*
Family history				
Negative	84,254	156,470	8,800.00	<0.01
Positive	23,930	96,478		
Gender				
Male	47,555	104,224	235.80	<0.01
Female	60,629	148,724		
Age group				
40-49	20,134	19,124	16,000.00	<0.01
50-59	34,308	59,604		
60-69	39,073	112,435		
70 and above	14,669	61,785		
Smoking history				
Non-smoker	92,970	230,749	2,300.00	Inconclusive
Smoker	15,214	22,199		
Alcohol intake				
Non-alcohol drinker	102,677	240,957	30.10	Inconclusive
Alcohol drinker	5,507	11,991		
Physical activity				
Active	883	1,746	60.70	<0.01
Minimally active	102,373	240,892		
Inactive	4,928	10,310		
BMI Group				
<20	13,911	17,482	8,500.00	<0.01
20-24	46,752	87,483		
25-29	33,788	92,799		
30+	13,733	55,184		

**Including newly diagnosed and existing cases*

Table 20: The Statistical Analysis of Systolic and Diastolic Pressure

Characteristics	Existing (n = 202,947)													Newly diagnosed (n = 50,001)										
	Systolic							Diastolic						Systolic							Diastolic					
	N	min	max	mean	sd	median	iqr	min	max	mean	sd	median	iqr	N	min	max	mean	sd	median	iqr	min	max	mean	sd	median	iqr
Gender																										
Male	82,034	62	285	138.561	17.627	137	21	30	185	80.256	10.831	80	14	22,190	100	270	150.149	14.577	148	18	36	200	87.503	10.666	89	13
Female	120,913	40	270	139.356	17.615	138	21	30	184	79.091	10.621	80	14	27,811	100	269	151.022	15.068	148	19	30	193	86.080	10.845	87	12
Age group																										
40-49	12,703	40	260	138.551	17.156	136	19	30	163	84.938	10.471	85	10	6,421	100	242	147.123	14.673	145	14	44	173	90.780	10.011	90	10
50-59	44,753	56	285	138.937	17.509	137	20	30	185	82.331	10.401	81	13	14,851	100	268	149.794	14.620	147	17	46	200	88.531	10.084	90	13
60-69	92,107	66	264	139.130	17.505	138	21	30	172	79.407	10.279	80	13	20,328	102	260	151.399	14.738	149	18	30	193	85.810	10.545	86	11
70 and above	53,384	62	270	139.068	18.030	138	22	30	183	76.229	10.651	77	12	8,401	100	270	152.954	15.118	150	18	33	190	82.567	11.392	82	14
Ethnicity																										
Malay	102,941	56	285	141.521	18.096	140	22	30	185	80.198	11.062	80	14	26,076	100	270	151.640	15.015	149	18	30	195	86.899	10.868	88	13
Chinese	48,473	66	251	136.498	16.268	135	20	30	154	78.245	9.936	80	13	11,919	100	269	149.281	14.128	147	16	35	200	85.668	10.374	87	10
Indian	20,123	70	260	136.013	17.789	133	24	30	165	79.414	10.734	80	15	4,544	100	229	147.586	13.965	145	15	45	190	87.064	10.015	90	12
Indigenous Sabah	10,669	40	240	139.199	18.241	137	20	30	151	81.232	11.205	80	14	3,544	107	220	151.948	15.187	150	19	33	180	87.705	11.550	89	14
Indigenous Sarawak	17,979	62	240	134.844	15.441	132	18	30	178	78.477	9.902	80	13	3,019	100	242	149.804	15.344	147	17	44	157	87.031	11.024	88	14
Orang Asli (Peninsular)	538	93	220	140.450	18.952	138	22	31	129	82.749	11.664	83	14	277	120	250	150.090	17.371	145	16	59	158	90.079	11.174	90	11
Others	2,224	69	236	139.365	17.174	138	22	43	134	80.169	11.001	80	14	622	100	233	153.486	17.017	150	20	53	173	87.518	13.073	88	13
State																										
Johor	18,243	79	239	140.978	17.108	140	21	30	135	78.924	10.574	80	15	3,517	107	245	150.968	14.255	148	18	42	160	85.958	10.285	87	12
Kedah	31,492	56	260	138.832	18.156	138	22	30	168	79.567	10.928	80	16	7,077	102	246	149.667	14.733	147	18	38	172	86.300	10.564	88	12
Kelantan	19,546	78	270	142.214	18.241	137	18	30	183	82.190	10.932	84	11	5,582	105	258	152.647	15.350	149	18	36	195	87.800	11.496	88.5	14
Melaka	8,578	80	253	140.232	16.866	140	20	32	144	78.152	10.815	78	14	1,577	103	269	149.074	13.393	147	14	54	166	86.102	10.645	86	12
Negeri Sembilan	12,800	76	240	139.657	17.479	138	21	36	163	79.493	10.563	80	14	3,078	102	239	150.972	14.596	148	17	40	152	86.946	10.406	88	13
Pahang	5,568	85	257	141.544	18.496	140	22	41	139	79.970	11.075	80	15	1,776	110	242	152.467	14.452	150	17	39	183	86.390	10.676	87	12
Pulau Pinang	13,646	74	238	135.579	17.170	132	25	30	144	79.769	10.156	80	12	4,082	100	237	148.742	14.372	146	16	30	169	87.134	10.254	90	10
Perak	20,812	70	285	138.632	17.315	138	21	30	185	78.867	10.421	80	14	4,750	102	260	150.086	13.947	148	18	40	190	85.607	10.290	87	11
Perlis	3,887	69	264	142.037	18.053	141	23	30	160	77.033	11.190	77	14	924	100	268	151.913	15.351	150	17	48	137	83.791	10.745	84	12.5
Selangor	9,483	70	265	138.276	18.320	136	23	30	184	79.803	10.781	80	14	2,958	100	241	149.847	15.164	147	17	35	190	86.955	10.530	88	12
Terengganu	7,527	70	234	143.163	17.560	142	25	30	129	81.055	10.564	80	15	1,527	108	243	151.403	14.854	148	17	52	175	86.494	10.516	87	12
Sabah	14,055	40	242	139.582	18.327	137	21	30	151	81.119	11.196	80	14	4,769	100	233	152.260	15.384	150	19	33	180	87.681	11.627	89	14
Sarawak	33,368	62	251	135.776	15.944	134	18	30	178	78.251	10.180	80	14	7,277	100	270	150.079	15.497	147	18	44	200	86.897	10.974	89	12
W.P. Kuala Lumpur	3,566	69	225	138.178	18.346	137	23	30	139	79.552	10.617	80	14	988	111	212	149.875	13.590	147	18	50	148	86.459	10.338	88	13
W.P. Labuan	176	95	194	138.051	16.743	138.5	24	40	110	78.080	11.784	79.5	15	38	120	197	153.237	16.395	151.5	21	55	121	87.816	12.696	86.5	13
W.P. Putrajaya	200	107	198	143.400	17.003	142	22	57	121	84.030	11.535	83	13	81	116	196	148.827	15.387	144	16	65	121	90.951	9.751	90	9

8.4 Hypercholesterolemia (HCL)

Newly diagnosed HCL is defined as TC of ≥ 5.2 mmol/L, with no known history of HCL. This definition is according to the Malaysian CPG.

The overall pravalence[3] of HCL among the beneficiaries was 72% (n=255,935), of which 29.8% (n=105,935) were newly diagnosed HCL and 42.2% (n=150,000) were existing HCL (refer to Table 21).

Socio-Demographic of HCL Cases

The female gender has a higher prevalence for both existing and newly diagnosed HCL with the prevalence of 44.3% and 31.1%, respectively, compared to the male gender with the prevalence of 39.4% and 28.1%, respectively. There is an increasing percentage for existing HCL in the older age group and decreasing percentage for newly diagnosed HCL in the younger age group. Existing HCL was highest among the indigenous Sarawak ethnicity (44.1%), followed by the Chinese and the Malays (43.3%) ethnicities. Newly diagnosed HCL was the highest in Orang Asli (45.3%), followed by the Malays (32.2%), the Indigenous Sabah (30.5%) and the Chinese (28.4%).

In terms of location, the percentage of existing HCL is the highest in Perlis (53.2%), followed by WP Labuan and WP Putrajaya (50.8%) and Johor (50.3%). In contrast, newly diagnosed HCL was the highest in Kelantan (41.5%), followed by Pahang (34.1%) and Pulau Pinang (33.3%). There were more existing HCL cases from KKs/MOH Hospitals (53.7%) whereas the newly diagnosed HCL was higher from screening at GPs (33.5%).

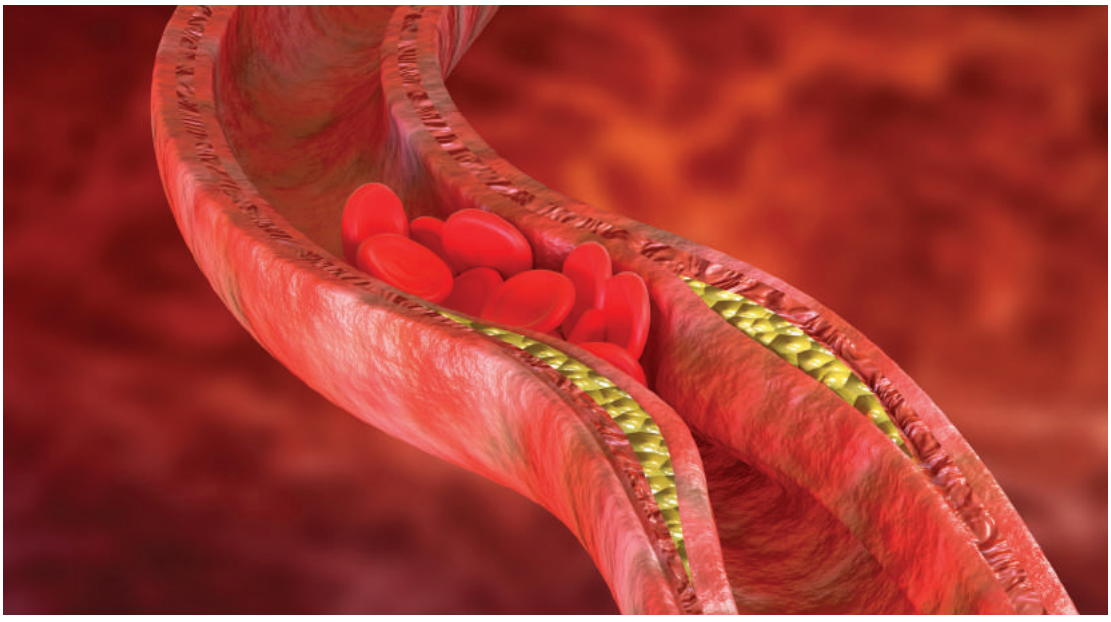


Table 21: Socio-Demographic Background of HCL

Characteristics	Total beneficiaries	Existing		Newly diagnosed	
		Number	%	Number	%
Gender					
Male	149,112	58,682	39.4	41,956	28.1
Female	205,932	91,318	44.3	63,979	31.1
Age group					
40-49	38,121	9,142	24.0	15,284	40.1
50-59	92,210	34,468	37.4	32,814	35.6
60-69	149,251	69,847	46.8	41,039	27.5
70 and above	75,462	36,543	48.4	16,798	22.3
Ethnicity					
Malay	174,254	75,427	43.3	56,089	32.2
Chinese	87,189	37,716	43.3	24,775	28.4
Indian	39,015	16,097	41.3	10,307	26.4
Indigenous Sabah	22,090	6,776	30.7	6,739	30.5
Indigenous Sarawak	27,386	12,065	44.1	6,380	23.3
Orang Asli (Peninsular)	1,347	317	23.5	610	45.3
Others	3,763	1,602	42.6	1,035	27.5
State					
Johor	28,640	14,404	50.3	7,503	26.2
Kedah	54,153	23,722	43.8	15,546	28.7
Kelantan	36,245	12,260	33.8	15,025	41.5
Melaka	13,459	6,475	48.1	3,329	24.7
Negeri Sembilan	22,093	9,984	45.2	6,516	29.5
Pahang	9,751	4,020	41.2	3,329	34.1
Pulau Pinang	26,353	10,202	38.7	8,773	33.3
Perak	35,397	16,147	45.6	9,778	27.6
Perlis	6,061	3,227	53.2	1,172	19.3
Selangor	18,771	7,325	39.0	5,841	31.1
Terengganu	12,235	5,770	47.2	3,825	31.3
Sabah	29,307	9,057	30.9	9,258	31.6
Sarawak	55,127	24,057	43.6	13,936	25.3
W.P. Kuala Lumpur	6,793	3,015	44.4	1,926	28.4
W.P. Labuan	299	152	50.8	73	24.4
W.P. Putrajaya	360	183	50.8	105	29.2

Total beneficiaries with lipid profile = 355,044
Total existing HCL = 150,000 (42.2%)
Total newly diagnosed HCL - 105,935 (29.8%)

**% is out of total beneficiaries with lipid profile result, cases with missing lipid profile are excluded*

The Associated Risk Factors with HCL

There is a significant association between HCL and age group, alcohol intake, physical activity, and BMI groups. The association with smoking and alcohol was inconclusive.

Table 22: HCL and the Associated Risk Factors

Risk Factors	Hypercholesterolemia			
	No HCL	With HCL*	X^2	*P*
Family history				
Negative	93,322	218,313	5,200.00	<0.01
Positive	5,787	37,622		
Gender				
Male	48,474	100,638	2700.00	<0.01
Female	50,635	155,297		
Age group				
40-49	13,695	24,426	1,700.00	<0.01
50-59	24,928	67,282		
60-69	38,365	110,886		
70 and above	22,121	53,341		
Smoking history				
Non-smoker	87,472	231,041	314.20	Inconclusive
Smoker	11,637	24,894		
Alcohol intake				
Non-alcohol drinker	93,423	244,386	183.70	Inconclusive
Alcohol drinker	5,686	11,549		
Physical activity				
Active	818	1,753	373.60	<0.01
Minimally active	93,114	244,415		
Inactive	5,177	9,767		
BMI Group				
<20	11,744	19,289	2,300.00	<0.01
20-24	38,665	93,597		
25-29	31,971	92,187		
30+	16,729	50,862		

**Including newly diagnosed and existing cases*

Table 23: The Statistical Analysis of TC Level

Characteristics	Total Cholesterol (TC)													
	Existing (n = 150,000)							Newly diagnosed (n = 105935)						
	N	min	max	mean	sd	median	iqr	N	min	max	mean	sd	median	iqr
Gender														
Male	58,656	0.1	317.0	4.796	5.788	4.5	1.5	41,956	5.2	289.0	6.448	8.847	5.9	1.0
Female	91,284	0.0	311.0	5.209	6.665	4.9	1.5	63,979	5.2	390.0	6.440	7.950	6.0	1.1
Age group														
40-49	9,140	0.1	260.0	5.304	6.705	5.0	1.6	15,284	5.2	321.0	6.609	10.993	5.9	0.9
50-59	34,446	0.1	311.0	5.236	6.667	4.9	1.6	32,814	5.2	297.0	6.348	6.403	6.0	1.1
60-69	69,817	0.1	317.0	5.032	6.521	4.7	1.5	41,039	5.2	390.0	6.492	8.912	6.0	1.0
70 and above	36,537	0.0	282.0	4.835	5.516	4.6	1.4	16,798	5.2	310.0	6.358	7.215	5.9	1.0
Ethicity														
Malay	75,386	0.0	317.0	5.297	7.451	4.9	1.6	56,089	5.2	390.0	6.665	9.802	6.0	1.1
Chinese	37,707	0.1	251.0	4.792	4.558	4.6	1.3	24,775	5.2	288.0	6.177	5.681	5.9	0.9
Indian	16,092	0.1	304.0	4.965	7.378	4.6	1.5	10,307	5.2	274.0	6.356	8.376	5.8	0.9
Indigenous Sabah	6,775	0.1	10.8	4.794	1.070	4.7	1.4	6,739	5.2	11.4	5.976	0.691	5.8	0.9
Indigenous Sarawak	12,062	0.1	15.7	4.540	1.002	4.4	1.2	6,380	5.2	14.4	5.957	0.713	5.8	0.9
Orang Asli (Peninsular)	316	2.0	277.0	6.929	21.645	4.7	1.3	610	5.2	289.0	9.271	25.500	6.0	1.3
Others	1,602	0.1	9.7	4.668	1.040	4.6	1.3	1035	5.2	11.9	6.055	0.753	5.9	0.9
State														
Johor	14,394	0.1	305.0	5.234	9.022	4.7	1.4	7,503	5.2	269.0	6.720	11.216	6.0	1.0
Kedah	23,709	0.1	15.5	4.860	1.141	4.7	1.5	15,546	5.2	16.9	6.148	0.821	6.0	1.0
Kelantan	12,259	0.0	23.6	5.489	1.357	5.4	1.8	15,025	5.2	15.7	6.307	0.931	6.1	1.2
Melaka	6,461	0.1	12.4	4.880	1.146	4.8	1.5	3,329	5.2	13.9	6.079	0.784	5.9	1.0
Negeri Sembilan	9,978	0.1	268.0	5.264	8.916	4.8	1.4	6,516	5.2	390.0	7.148	14.784	5.9	1.0
Pahang	4,019	1.6	238.0	5.056	4.990	4.8	1.6	3,329	5.2	249.0	6.332	4.586	6.0	1.1
Pulau Pinang	10,202	0.1	12.9	4.783	1.061	4.7	1.4	8,773	5.2	14.9	6.085	0.747	5.9	1.0
Perak	16,141	0.1	304.0	5.674	13.334	4.6	1.4	9,778	5.2	321.0	7.744	18.686	5.9	1.0
Perlis	3,227	1.9	11.6	4.765	1.071	4.6	1.4	1,172	5.2	10.0	6.107	0.769	5.9	1.0
Selangor	7,323	0.1	317.0	5.158	9.627	4.6	1.5	5,841	5.2	294.0	6.842	12.857	5.9	1.0
Terengganu	5,770	1.7	311.0	5.461	6.928	5.2	1.7	3,825	5.2	310.0	6.811	10.674	6.1	1.2
Sabah	9,055	1.7	10.8	4.780	1.074	4.7	1.4	9,258	5.2	15.2	5.995	0.714	5.8	0.8
Sarawak	24,052	0.1	15.7	4.580	1.011	4.5	1.3	13,936	5.2	15.7	5.980	0.705	5.8	0.8
W.P. Kuala Lumpur	3,015	0.1	16.7	4.809	1.173	4.7	1.5	1,926	5.2	12.3	6.082	0.772	5.9	1.0
W.P. Labuan	152	2.5	7.6	4.649	1.049	4.5	1.4	73	5.2	10.0	6.022	0.746	5.9	0.7
W.P. Putrajaya	183	0.1	9.8	4.840	1.128	4.7	1.3	105	5.2	8.1	6.110	0.770	5.9	0.9

**Cases with missing TC values are excluded*

Table 24: The Statistical Analysis of LDL Level

Characteristics	Low-Density Lipoprotein (LDL)													
	Existing (n = 150,000)							Newly diagnosed (n = 105935)						
	N	min	max	mean	sd	median	iqr	N	min	max	mean	sd	median	iqr
Gender														
Male	58,632	0.03	185.4	2.602	1.664	2.4	1.3	40,564	0.02	195.6	3.848	1.902	3.7	0.9
Female	91,284	0.02	175.2	2.803	2.255	2.6	1.3	63,110	0.06	172.0	3.846	2.094	3.7	0.9
Age group														
40-49	9,128	0.05	160.0	2.978	2.356	2.8	1.4	14,825	0.06	154.0	3.852	2.539	3.7	0.9
50-59	34,444	0.02	134.6	2.872	1.659	2.7	1.4	31,991	0.08	195.6	3.880	2.020	3.7	1.0
60-69	69,817	0.02	175.2	2.703	2.126	2.5	1.2	40,250	0.02	172.0	3.845	1.857	3.7	0.9
70 and above	36,527	0.03	185.4	2.563	2.124	2.4	1.1	16,608	0.09	143.4	3.781	1.877	3.7	0.9
Ethnicity														
Malay	75,402	0.03	175.2	2.902	2.289	2.7	1.4	54,815	0.08	195.6	3.966	2.322	3.8	1.0
Chinese	37,688	0.03	185.4	2.491	1.801	2.4	1.1	24,418	0.02	140.0	3.669	1.775	3.6	0.8
Indian	16,088	0.03	162.8	2.701	2.095	2.5	1.3	10,107	0.10	9.0	3.791	0.711	3.7	0.9
Indigenous Sabah	6,769	0.07	7.6	2.676	0.945	2.6	1.2	6,543	0.10	98.8	3.750	1.369	3.6	0.8
Indigenous Sarawak	12,052	0.02	11.6	2.419	0.886	2.3	1.1	6,187	0.06	11.1	3.651	0.710	3.6	0.8
Orang Asli (Peninsular)	317	0.18	134.4	3.102	7.477	2.5	1.2	592	1.15	143.8	4.260	6.879	3.8	1.1
Others	1,600	0.02	7.7	2.509	0.919	2.4	1.1	1012	0.10	9.4	3.737	0.779	3.7	0.8
State														
Johor	14,396	0.03	185.4	2.782	3.127	2.6	1.3	7,376	0.07	143.4	3.857	2.402	3.7	0.9
Kedah	23,708	0.02	13.5	2.726	0.997	2.6	1.3	15,244	0.10	15.2	3.869	0.799	3.8	1.0
Kelantan	12,252	0.08	18.9	3.254	1.192	3.1	1.6	14,660	0.26	12.5	4.003	0.882	3.9	1.1
Melaka	6,473	0.03	9.2	2.713	1.026	2.6	1.3	3,278	1.12	10.4	3.807	0.780	3.7	0.9
Negeri Sembilan	9,978	0.03	175.2	2.748	2.910	2.6	1.3	6,369	0.08	154.0	3.851	2.593	3.7	0.9
Pahang	4,019	0.10	9.5	2.785	1.101	2.6	1.4	3,232	0.33	11.7	3.892	0.841	3.8	0.9
Pulau Pinang	10,198	0.04	10.3	2.543	0.912	2.4	1.2	8,646	0.10	11.1	3.703	0.758	3.6	0.9
Perak	16,143	0.04	162.8	2.721	3.488	2.5	1.3	9,643	0.20	195.6	3.956	4.648	3.7	0.9
Perlis	3,227	0.10	9.1	2.647	0.971	2.5	1.3	1,145	0.10	7.1	3.861	0.756	3.7	0.9
Selangor	7,322	0.03	159.4	2.609	2.076	2.4	1.3	5,761	0.09	9.1	3.782	0.774	3.7	0.9
Terengganu	5,770	0.10	160.0	3.207	3.500	3.0	1.6	3,700	0.10	172.0	4.127	3.815	3.9	1.1
Sabah	9,050	0.04	7.6	2.658	0.948	2.5	1.2	8,957	0.10	98.8	3.748	1.231	3.7	0.8
Sarawak	24,031	0.02	52.2	2.445	0.941	2.3	1.1	13,599	0.02	140.0	3.682	1.367	3.6	0.8
W.P. Kuala Lumpur	3,014	0.06	8.7	2.656	1.008	2.5	1.3	1,893	1.60	9.5	3.775	0.734	3.7	0.9
W.P. Labuan	152	0.63	5.6	2.545	0.927	2.4	1.2	69	2.20	5.5	3.663	0.653	3.7	0.7
W.P. Putrajaya	183	0.05	8.3	2.650	1.042	2.4	1.3	102	2.11	5.7	3.828	0.684	3.7	0.7

**Cases with missing LDL values are excluded*

8.5 Anxiety

Newly diagnosed anxiety is defined as having a GAD questionnaire score of ≥ 10, with no known history of mental illness.

The prevalence of existing mental illness among PeKa B40 beneficiaries was 0.7% (n=2,685). However, the prevalance of newly diagnosed anxiety was slightly lower, which was 0.6% (n=2,242) (refer to Table 25).

Socio-Demographic Characteristics

There was no significant variation in the prevalence of existing mental illness and newly diagnosed anxiety between genders or age groups. The prevalence of existing mental illness among ethnicities ranges between 0.3% and 1.6%. The prevalence of existing mental illness was relatively high among the indigenous Sarawak. On the other hand, the newly diagnosed anxiety cases were fairly low.

The prevalence of newly diagnosed anxiety cases among ethnicities ranges between 0.1% and 1.4%. The highest prevalence was among Indians, and the lowest prevalence was among the Orang Asli (Peninsular).

There was an apparent geographical variation in the prevalence of anxiety. The prevalence of existing anxiety among the states varies between 0.2% and 1.4%, with the highest in Sarawak. On the other hand, the prevalence of newly diagnosed anxiety varies between 0.3% and 3.9%, with the highest prevalence in Putrajaya and Kuala Lumpur at 3.9% and 2.1%, respectively.

Table 25: Socio-Demographic Background of Beneficiaries with Anxiety

Characteristics	Total beneficiaries	Existing		Newly diagnosed	
		Number	%	Number	%
Gender					
Male	151,779	1,117	0.7	903	0.6
Female	209,353	1,568	0.7	1,339	0.6
	361,132				
Age group					
40-49	39,258	232	0.6	236	0.6
50-59	93,912	783	0.8	630	0.7
60-69	151,508	1,133	0.7	926	0.6
70 and above	76,454	537	0.7	450	0.6
Ethnicity					
Malay	178,327	863	0.5	867	0.5
Chinese	88,126	1,009	1.1	545	0.6
Indian	39,629	269	0.7	561	1.4
Indigenous Sabah	22,219	72	0.3	165	0.7
Indigenous Sarawak	27,649	434	1.6	74	0.3
Orang Asli (Peninsular)	1370	6	0.4	2	0.1
Others	3,812	32	0.8	28	0.7
State					
Johor	28,914	205	0.7	263	0.9
Kedah	56,663	192	0.3	241	0.4
Kelantan	36,433	91	0.2	101	0.3
Melaka	13,606	93	0.7	83	0.6
Negeri Sembilan	22,257	92	0.4	153	0.7
Pahang	9,854	44	0.4	42	0.4
Pulau Pinang	27,167	166	0.6	139	0.5
Perak	36,294	479	1.3	255	0.7
Perlis	6,149	14	0.2	32	0.5
Selangor	18,896	244	1.3	323	1.7
Terengganu	12,339	49	0.4	59	0.5
Sabah	29,482	161	0.5	221	0.7
Sarawak	55,572	757	1.4	170	0.3
W.P. Kuala Lumpur	6,839	91	1.3	144	2.1
W.P. Labuan	304	4	1.3	2	0.7
W.P. Putrajaya	363	3	0.8	14	3.9

Total beneficiaries = 361,132
Total existing mental illness = 2,685 (0.7%)
Total newly diagnosed anxiety = 2,242 (0.6%)

Anxiety and the Association with the Beneficiaries' Factors

Several beneficiaries' factors seem associated with the presence of anxiety. The presence of such cases among the family members is one of the factors. A significant association was also observed with their biological characteristics, i.e. gender and age-group, and other lifestyle risk factors, i.e., BMI and physical activities (refer to Table 26). The association with smoking and alcohol was inconclusive.

Table 26: The Association of Beneficiaries' Factors and the Presence of Anxiety

Risk Factors	Anxiety			
	No mental illness	With known mental illnes/newly diagnosed anxiety	X^2	*P*
Family history				
Negative	355,457	4,761	1,900.00	<0.01
Positive	748	166		
Gender				
Male	149,759	2,020	2.20	0.14
Female	206,446	2,907		
Age group				
40-49	38,790	468	25.50	<0.01
50-59	92,499	1,413		
60-69	149,449	2,059		
70 and above	75,467	987		
Smoking history				
Non-smoker	319,333	4,386	2.10	Inconclusive
Smoker	36,872	541		
Alcohol intake				
Non-alcohol drinker	339,078	4,556	78.10	Inconclusive
Alcohol drinker	17,127	371		
Physical activity				
Active	2,579	50	8.10	<0.01
Minimally active	338,617	4,648		
Inactive	15,009	229		
BMI Group				
<20	30,827	566	52.30	<0.01
20-24	132,452	1,783		
25-29	124,961	1,626		
30+	67,965	952		

Table 27: The Statistical Analysis of GAD Score

Characteristics	Existing (n =2,685)							Newly diagnosed (n = 2,242)						
	N	min	max	mean	sd	median	iqr	N	min	max	mean	sd	median	iqr
Gender														
Male	1117	0	27	2.645	4.872	0	3	903	10	21	15	4	14	7
Female	1,568	0	27	2.804	4.803	0	4	1,339	10	21	14	4	13	6
Age group														
40-49	232	0	27	3.159	5.074	0	4	236	10	21	14.729	3.822	14	6.5
50-59	783	0	27	2.659	4.668	0	4	630	10	21	14.051	3.579	13	6
60-69	1133	0	27	2.823	4.995	0	3	926	10	21	14.505	3.818	14	7
70 and above	537	0	27	2.492	4.598	0	3	450	10	21	14.54	4.017	13.5	7
Ethnicity														
Malay	863	0	27	3.014	4.719	0	4	867	10	21	14.506	3.837	14	7
Chinese	1009	0	27	2.651	4.628	0	3	545	10	21	14.105	3.771	13	6
Indian	269	0	27	5.164	6.837	2	8	561	10	21	14.758	3.868	14	7
Indigenous Sabah	72	0	24	3.681	4.596	2	6	165	10	21	14.091	3.416	13	4
Indigenous Sarawak	434	0	25	0.615	2.507	0	0	74	10	21	13.865	3.783	13	5
Orang Asli (Peninsular)	6	0	16	3	6.419	0	2	2	13	13	13	0	13	0
Others	32	0	24	4.25	6.122	2	4	28	10	21	13.679	3.497	12.5	4
State														
Johor	205	0	27	3.439	5.494	0	5	263	10	21	15.209	4.182	14	10
Kedah	192	0	23	2.594	3.938	1	4	241	10	21	14.22	3.629	14	6
Kelantan	91	0	20	4.319	5.155	2	7	101	10	21	14.604	4.49	13	11
Melaka	93	0	18	2.699	4.043	0	5	83	10	21	14.241	3.934	13	7
Negeri Sembilan	92	0	26	3.598	5.469	1.5	5	153	10	21	13.771	3.617	13	5
Pahang	44	0	25	4.614	6.571	1.5	7	42	10	21	14.548	3.535	14	5
Pulau Pinang	166	0	27	3.355	5.902	0	4	139	10	21	14.482	3.682	14	5
Perak	479	0	27	2.399	4.619	0	3	255	10	21	14.384	3.859	13	7
Perlis	14	0	15	3.786	4.042	3	5	32	10	21	15.031	3.412	14	4
Selangor	244	0	27	5.02	6.125	3	8	323	10	21	14.402	3.848	13	6
Terengganu	49	0	19	2.673	4.67	0	2	59	10	21	14.305	3.344	14	5
Sabah	161	0	24	3.571	4.65	2	6	221	10	21	14.145	3.424	13	4
Sarawak	757	0	27	1.081	3.142	0	0	170	10	21	14.071	3.693	13	6
W.P. Kuala Lumpur	91	0	27	4.637	5.658	3	7	144	10	21	14.465	3.685	14	5.5
W.P. Labuan	4	0	23	6	11.343	0.5	12	2	12	17	14.5	3.536	14.5	5
W.P. Putrajaya	3	5	6	5.333	0.577	5	1	14	10	21	15.214	4.282	15	7

8.6 Depression

Newly diagnosed depression is defined as having a PHQ of ≥ 10, with no existing mental illness. The overall prevalence of depressive illness was 1.5%. Among those, 1.1% of the beneficiaries did not have a previous history of mental illness but was detected to have depression during the mental health screening. The prevalence of newly diagnosed depressive illness was relatively higher than those with an existing illness, in which the prevalence was 0.7% (refer to Table 28).

Socio-Demographic Characteristics

There was no apparent variation in the prevalence of newly diagnosed depression between genders or age groups. Newly diagnosed depression was relatively high among the Indian ethnicity (3.0%), followed by the Indigenous Sabah (1.8%), Malay (1.4%) and others (1.4%).

In terms of location, the percentage of newly diagnosed depression was the highest in Putrajaya (6.9%), followed by Kuala Lumpur (4.2%) and Selangor (3.9%).

Table 28: Socio-Demographic Backgrounds of Beneficiaries with Depressive Illness

Characteristics	Total beneficiaries	Existing		Newly diagnosed	
		Number	%	Number	%
Gender					
Male	151,779	1,117	0.7	2,181	1.4
Female	209,353	1,568	0.7	3,081	1.5
Age group					
40-49	39,258	232	0.6	458	1.2
50-59	93,912	783	0.8	1,408	1.5
60-69	151,508	1,133	0.7	2,220	1.5
70 and above	76,454	537	0.7	1,176	1.5
Ethnicity					
Malay	178,327	863	0.5	2,509	1.4
Chinese	88,126	1,009	1.1	947	1.1
Indian	39,629	269	0.7	1,172	3.0
Indigenous Sabah	22,219	72	0.3	390	1.8
Indigenous Sarawak	27,649	434	1.6	180	0.7
Orang Asli (Peninsular)	1,370	6	0.4	12	0.9
Others	3,812	32	0.8	52	1.4
State					
Johor	28,914	205	0.7	647	2.2
Kedah	56,663	192	0.3	604	1.1
Kelantan	36,433	91	0.2	345	0.9
Melaka	13,606	93	0.7	189	1.4
Negeri Sembilan	22,257	92	0.4	362	1.6
Pahang	9,854	44	0.4	132	1.3
Pulau Pinang	27,167	166	0.6	285	1.0
Perak	36,294	479	1.3	545	1.5
Perlis	6,149	14	0.2	87	1.4
Selangor	18,896	244	1.3	731	3.9
Terengganu	12,339	49	0.4	169	1.4
Sabah	29,482	161	0.5	515	1.7
Sarawak	55,572	757	1.4	333	0.6
W.P. Kuala Lumpur	6,839	91	1.3	286	4.2
W.P. Labuan	304	4	1.3	7	2.3
W.P. Putrajaya	363	3	0.8	25	6.9

Total beneficiaries = 361,132
Total existing mental illness = 2,685 (0.7%)
Total newly diagnosed depression = 5,262 (1.5%)

The Associated Risk Factors with Depression

Several beneficiaries' factors seem associated with depressive illness. The presence of mental illness among the family members is one of the factors. A significant association was also observed with their biological characteristics, i.e., gender, age group, and other lifestyle risk factors, i.e., BMI and physical activities (refer to Table 29). The association with smoking and alcohol was inconclusive.

Table 29: Depression and Associated Risk Factors

Risk Factors	Depression			
	No. Depression	With known mental illness/depression*	X^2	*P*
Family history				
Negative	352,457	7,761	1,400.00	<0.01
Positive	728	186		
Gender				
Male	148,481	3,298	0.90	0.33
Female	204,704	4,649		
Age group				
40-49	38,568	690	44.10	<0.01
50-59	91,721	2,191		
60-69	148,155	3,353		
70 and above	74,741	1,713		
Smoking history				
Non-smoker	316,691	7,028	12.70	Inconclusive
Smoker	36,494	919		
Alcohol intake				
Non-alcohol drinker	336,283	7,351	124.20	Inconclusive
Alcohol drinker	16,902	596		
Physical activity				
Active	2,558	71	6.70	<0.01
Minimally active	335,690	7,575		
Inactive	14,937	301		
BMI Group				
<20	30,444	949	135.40	<0.01
20-24	131,461	2,774		
25-29	124,004	2,583		
30+	67,276	1,641		

**Including newly diagnosed and existing cases*

Table 30: The Statistical Analysis of PHQ-9 Score

Characteristics	Existing (n = 2,685)							Newly diagnosed (n = 5,262)						
	N	min	max	mean	sd	median	iqr	N	min	max	mean	sd	median	iqr
Gender														
Male	1,117	0	27	2.645	4.872	0	3	2181	10	27	13.90555	4.429392	12	5
Female	1,568	0	27	2.804	4.803	0	4	3081	10	27	13.66342	4.12397	12	4
Age group														
40-49	232	0	27	3.159	5.074	0	4	458	10	27	13.786	4.211	12	5
50-59	783	0	27	2.659	4.668	0	4	1,408	10	27	13.615	4.070	12	4
60-69	1,133	0	27	2.823	4.995	0	3	2,220	10	27	13.797	4.324	12	4
70 and above	537	0	27	2.492	4.598	0	3	1,176	10	27	13.870	4.355	12	4
Ethnicity														
Malay	863	0	27	3.014	4.719	0	4	2,509	10	27	13.417	4.099	12	5
Chinese	1,009	0	27	2.651	4.628	0	3	947	10	27	14.178	4.607	13	5
Indian	269	0	27	5.164	6.837	2	8	1,172	10	27	14.381	4.519	13	5
Indigenous Sabah	72	0	24	3.681	4.596	2	6	390	10	27	13.438	3.548	12	4
Indigenous Sarawak	434	0	25	0.615	2.507	0	0	180	10	27	13.006	3.357	12	5
Orang Asli (Peninsular)	6	0	16	3.000	6.419	0	2	12	10	15	12.333	1.826	12	3
Others	32	0	24	4.250	6.122	2	4	52	10	27	14.462	4.500	13	7
State														
Johor	205	0	27	3.439	5.494	0	5	647	10	27	13.978	4.962	12	4
Kedah	192	0	23	2.594	3.938	1	4	604	10	27	13.603	3.905	12	4
Kelantan	91	0	20	4.319	5.155	2	7	345	10	27	13.339	4.789	11	4
Melaka	93	0	18	2.699	4.043	0	5	189	10	27	13.545	3.901	12	4
Negeri Sembilan	92	0	26	3.598	5.469	1.5	5	362	10	27	13.500	4.224	12	5
Pahang	44	0	25	4.614	6.571	1.5	7	132	10	27	13.341	3.508	12	3.5
Pulau Pinang	166	0	27	3.355	5.902	0	4	285	10	27	14.305	4.295	13	6
Perak	479	0	27	2.399	4.619	0	3	545	10	27	13.626	4.151	12	4
Perlis	14	0	15	3.786	4.042	3	5	87	10	27	13.172	3.626	12	4
Selangor	244	0	27	5.020	6.125	3	8	731	10	27	14.152	4.339	13	5
Terengganu	49	0	19	2.673	4.670	0	2	169	10	27	13.254	3.896	12	4
Sabah	161	0	24	3.571	4.650	2	6	515	10	27	13.485	3.630	12	4
Sarawak	757	0	27	1.081	3.142	0	0	333	10	27	13.583	3.821	12	4
W.P. Kuala Lumpur	91	0	27	4.637	5.658	3	7	286	10	27	14.759	4.699	13	7
W.P. Labuan	4	0	23	6.000	11.343	0.5	12	7	10	24	13.429	4.962	11	4
W.P. Putrajaya	3	5	6	5.333	0.577	5	1	25	10	27	13.520	4.331	12	3

8.7 Summary

There was a high prevalence of DM, HPT and HCL among PeKa B40 beneficiaries, and a significant percentage were undiagnosed previously. The prevalence of existing mental illness was 0.7%; meanwhile, the prevalence of newly diagnosed mental illness specifically for anxiety and depression was doubled. There are some variations in the prevalence of NCDs among the ethnicities and states.

The diagnosis of newly diagnosed DM is based on the level of HbA1c. This method is convenient because it does not require the beneficiaries to fast before the blood sample is taken. In addition, it is a confirmatory biomarker as outlined in CPG for DM.

Highlights

The prevalence of existing DM, HPT and HCL were almost two times higher compared to its prevalence reported by NHMS 2019 of the same B40 population and age group. In contrast, the prevalence of newly diagnosed DM and HPT was slightly lower compared to NHMS 2019, with the exception of newly diagnosed HCL, which was found to be higher among PeKa B40 beneficiaries.

Overall, besides reassessment of those with existing disease, the PeKa B40 scheme had successfully detected a significant percentage of NCDs among those who were not known to have a disease priorly. They are subsequently referred to a government facility for further assessment and to initiate treatment. Early intervention will prevent further undesirable complications which would have a greater impact on their life in terms of quality and economically.

CHAPTER 9: PARTNER PROVIDERS

9.1 Introduction

PeKa B40 scheme is supported by partner providers, which complemented the provision of the health screening program. The partner providers include GPs, Private Laboratories, KKs and Government Hospitals.

9.2 Distribution of Partner GP & KK

There was a total of 1,899 GPs registered, 893 KKs, 145 Government Hospitals, and 6 Private Laboratories with their branches located in most cities and towns (refer to Figure 15). PeKa B40 partner providers are well distributed in the country (refer to Figure 15). Thus, the availability of these providers across the country increased the accessibility to primary health services, specifically for free health screening under PeKa B40. The GPs are more densely located in urban or suburban areas. Therefore, for those areas where GPs are scarce, the services were mainly provided by KKs (refer to Figure 15).

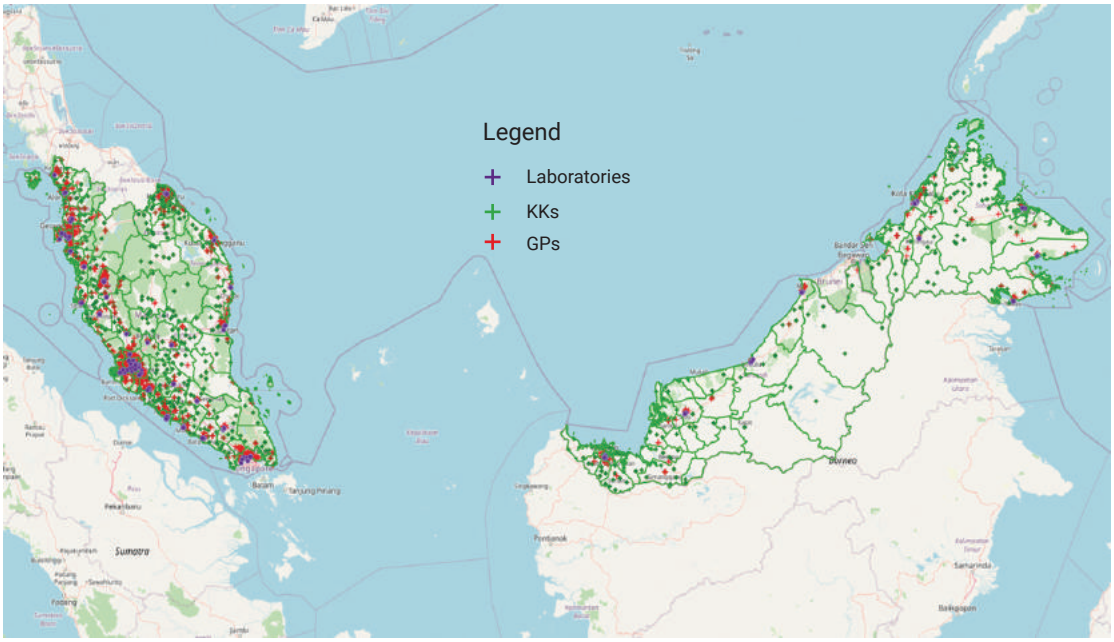


Figure 15: Geographical Distribution of KKs, GPs and Laboratories in Malaysia

9.3 The GP & KK to B40 Population Ratio by States

The top five states with high facilities ratio per population for B40 are Kelantan, Sarawak, Terengganu, Kedah and Johor, with more than 2,000 beneficiaries per facility ratio (refer to Table 31).

Table 31: Number of Facilities per Population for Aged 40 and Above by State

State	BSH(all aged ≥ 40)	GP	KK	Total Facilities	Facility/ population ratio
Kelantan	353,803	48	86	134	2,640
Sarawak	555,888	94	122	216	2,574
Terengganu	219,296	54	45	99	2,215
Kedah	452,096	148	59	207	2,184
Johor	556,106	164	93	257	2,164
Perak	527,188	171	84	255	2,067
Perlis	55,921	18	10	28	1,997
Pahang	268,130	58	87	145	1,849
Pulau Pinang	287,603	137	27	164	1,754
Sabah	408,043	138	104	242	1,686
Melaka	152,764	60	31	91	1,679
Negeri Sembilan	201,233	78	50	128	1,572
W.P. Labuan	10,404	6	2	8	1,301
W.P. Kuala Lumpur	210,414	170	13	183	1,150
Selangor	595,301	547	76	623	956
W.P. Putrajaya	2,503	8	4	12	209

9.4 The Number of Beneficiaries Screened by Providers

Although Selangor has the most registered GPs, the facilities-beneficiaries ratio was the lowest as Selangor is the most populated state. The top five states with a high facility to beneficiaries' ratio were Kedah (1:336), Kelantan (1:327), Sarawak (1:303), Perlis (1:440) and Pulau Pinang (1:375) (refer to Table 32).

Table 32: The Number of Beneficiaries Screened per Facility Ratio by State

State	Beneficiaries screened	GP	KK	Total facilities	Facility/ Populatin Ratio	Rank
Kedah	69,496.00	148	59	207	336	1
Kelantan	43,837.00	48	86	134	327	2
Sarawak	65,393.00	94	122	216	303	3
Perlis	8,366.00	18	10	28	299	4
Perak	53,358.00	171	84	255	209	5
Negeri Sembilan	26,577.00	78	50	128	208	6
Pulau Pinang	33,848.00	137	27	164	206	7
Melaka	18,024.00	60	31	91	198	8
Terengganu	17,003.00	54	45	99	172	9
Johor	38,657.00	164	93	257	150	10
Sabah	36,097.00	138	104	242	149	11
Pahang	13,660.00	58	87	145	94	12
W.P. Labuan	476.00	6	2	8	60	13
W.P. Kuala Lumpur	8,938.00	170	13	183	49	14
W.P. Putrajaya	457.00	8	4	12	38	15
Selangor	23,275.00	547	76	623	37	16

Note: The numbers are based on provider's address.

The top five (5) ranking states based on the number of KKs involved were Sarawak (122), Sabah (104), Johor (93), Pahang (87) and Kelantan (86). KKs are relatively more involved in Sabah and Sarawak. This is expected considering the sparseness of the population whereby KKs are more accessible to the local communities.

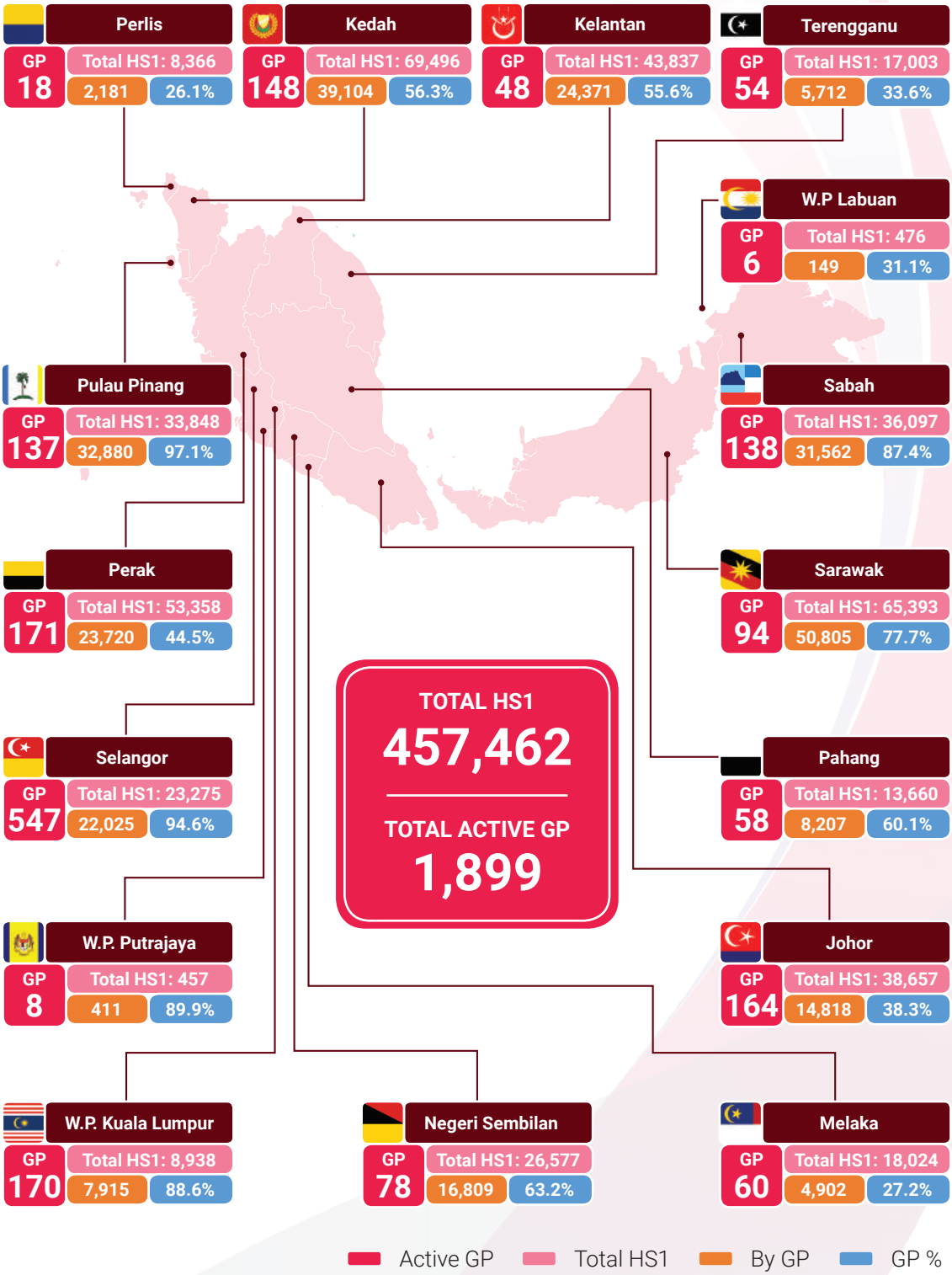


Figure 16: The Number of Registered GPs vs Number of HS by State

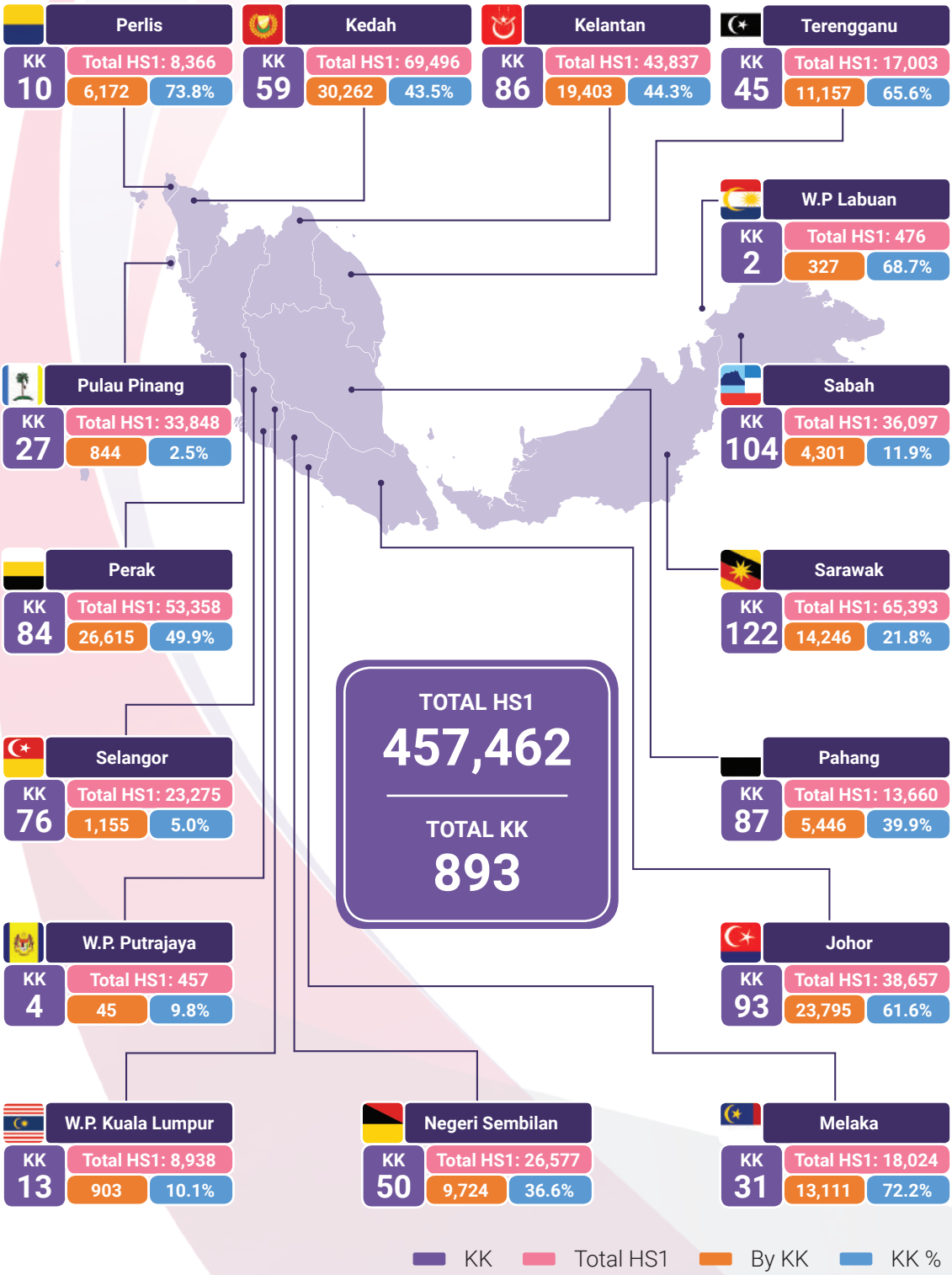


Figure 17: The Number of KKs vs Number of HS by State

9.5 Hospital

Hospital involvement in the PeKa B40 scheme is mainly for providing HA, CCTI and TI. Although the health screening is primarily done by GPs and KKs, under some circumstances, hospitals would also do the health screening for beneficiaries who apply for HA and CCTI.

Table 33 shows the top 20 hospitals which utilised the PeKa B40 scheme. *Hospital Sultanah Bahiyah, Alor Setar*, recorded the highest volume of applications, especially for HA. *Hospital Wanita dan Kanak-Kanak, Likas* in Sabah also recorded a high volume which mainly comprises CCTI and TI, followed by Hospital Taiping.

Table 33: The Top 20 Hospitals with the Highest Number of Contributions to PeKa B40

Rank	Hospital Name	HS1	HS2	HA	CCTI	TI	Total
1	Hospital Sultanah Bahiyah, Alor Setar	78	40	1,399	492	2,011	**4,020**
2	Hospital Wanita dan Kanak-Kanak, Likas	0	0	7	803	2,101	**2,911**
3	Hospital Taiping	2	1	1,238	76	907	**2,224**
4	Hospital Umum Sarawak, Kuching	19	5	530	294	894	**1,742**
5	Hospital Sultan Abdul Halim, Sungai Petani	10	7	1,164	70	477	**1,728**
6	Hospital Melaka	11	5	681	246	781	**1,724**
7	Hospital Pulau Pinang	22	4	680	262	705	**1,673**
8	Hospital Raja Perempuan Zainab II, Kota Bharu	31	16	1,023	121	337	**1,528**
9	Hospital Queen Elizabeth, Kota Kinabalu	108	61	811	30	346	**1,356**
10	Hospital Kuala Lumpur	5	3	607	227	441	**1,283**
11	Hospital Raja Permaisuri Bainun, Ipoh	9	4	707	126	376	**1,222**
12	Hospital Sultan Ismail, Johor Bahru	11	4	715	92	333	**1,155**
13	Hospital Serdang	4	4	811	2	221	**1,042**
14	Hospital Tuanku Ja'afar, Seremban	13	7	640	60	207	**927**
15	Hospital Selayang	48	9	584	28	195	**864**
16	Institut Kanser Negara	0	0	1	316	410	**727**
17	Hospital Miri	129	124	307	46	114	**720**
18	Hospital Sultanah Nur Zahirah, Kuala Terengganu	39	15	382	70	145	**651**
19	Hospital Sibu	8	4	156	129	304	**601**
20	Hospital Rehabilitasi Cheras	114	42	270	0	169	**595**

9.6 Laboratory

There are six main private laboratories and government laboratories involved in the PeKa B40 programme. They are Quantum Diagnostics Sdn. Bhd., Clinipath (Malaysia) Sdn. Bhd., BP Clinical Lab Sdn. Bhd., Pantai Premier Pathology Sdn. Bhd., Pathology & Clinical Laboratory (M) Sdn. Bhd. and Gribbles Pathology (Malaysia) Sdn. Bhd.

Based on Figure 18, Gribbles Pathology (26.0%) showed the highest number of laboratory investigations performed, followed by Pathlab (22.3%) and BP Clinical Lab (18.2%). Based on Table 34, Kedah (70,091) showed the highest number of laboratory investigations performed by private partner laboratories with the highest number of HS done, followed by Sarawak (66,003), Perak (53,195) and Kelantan (44,138).

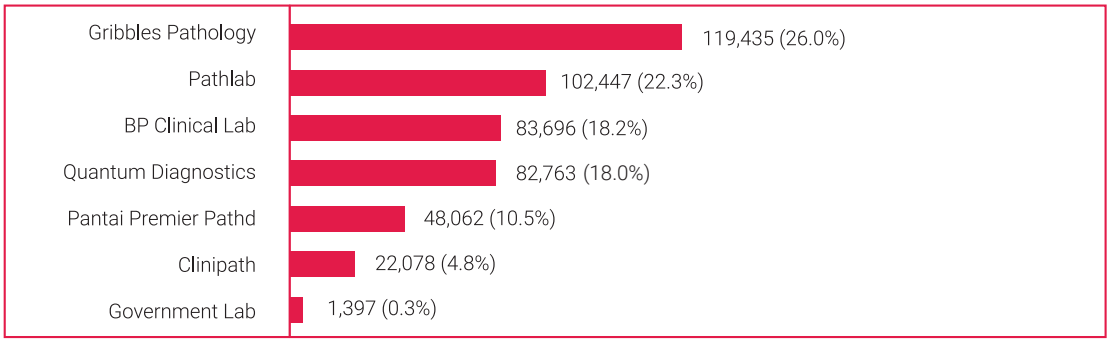


Figure 18: Overall Number of Laboratory Investigations Performed

Table 34: The Number of Laboratory Investigations Performed by Private Partner Laboratories and States

State	Laboratory						Total
	Gribbles	Clinipath	Pathlab	BP Clinic	Pantai	Quantum	
Johor	6,736	3,121	12,014	11,840	3,317	1,701	**38,773**
%	17.4	8.0	31.0	30.5	8.6	4.4	**100.0**
Kedah	19,348	2,023	17,205	11,810	3,879	15,696	**70,091**
%	27.6	2.9	24.5	16.8	5.5	22.4	**100.0**
Kelantan	21,113	0	8,005	594	14,028	332	**44,138**
%	47.8	0.0	18.1	1.3	31.8	0.8	**100.0**
Melaka	3,543	703	3,347	429	5,339	4,669	**18,041**
%	19.6	3.9	18.6	2.4	29.6	25.9	**100.0**
Negeri Sembilan	7,683	523	3,679	6,799	4,217	3,535	**26,481**
%	29.0	2.0	13.9	25.7	15.9	13.3	**100.0**
Pahang	2,800	809	2,582	2,022	2,722	2,870	**13,813**
%	20.3	5.9	18.7	14.6	19.7	20.8	**100.0**
Pulau Pinang	7,824	824	6,242	11,843	2,079	4,959	**33,897**
%	23.1	2.4	18.4	34.9	6.1	14.6	**100.0**
Perak	11,277	0	13,758	23,955	2,160	2,019	**53,195**
%	21.2	0.0	25.9	45.0	4.1	3.8	**100.0**
Perlis	80	0	0	573	0	7,788	**8,454**
%	0.9	0.0	0.0	6.8	0.0	92.1	**100.0**
Selangor	6,712	3,800	2,301	3,473	3,601	3,458	**23,435**
%	28.6	16.2	9.8	14.8	15.4	14.8	**100.0**
Terengganu	33	0	3,623	1,474	4,296	7,839	**17,402**
%	0.2	0.0	20.8	8.5	24.7	45.0	**100.0**
Sabah	11,283	5,837	6,314	411	153	11,978	**36,208**
%	31.2	16.1	17.4	1.1	0.4	33.1	**100.0**
Sarawak	19,231	1,897	22,793	7,216	541	13,980	**66,003**
%	29.1	2.9	34.5	10.9	0.8	21.2	**100.0**
W.P. Kuala Lumpur	1,616	2,510	446	1,244	1,720	1,254	**8,913**
%	18.1	28.2	5.0	14.0	19.3	14.1	**100.0**
W.P. Labuan	2	31	132	3	0	404	**572**
%	0.3	5.4	23.1	0.5	0.0	70.6	**100.0**
W.P. Putrajaya	154	0	6	10	10	281	**462**
%	33.3	0.0	1.3	2.2	2.2	60.8	**100.0**
Total	119,435	22,078	102,447	83,696	48,062	82,763	**459,878**
%	26.0	4.8	22.3	18.2	10.5	18.0	**100.0**

**Total includes government lab*

9.7 Vendors Supplying HA

There was a total of 333 vendors which supplied the various types of HA. The highest volume of HA application was for IOL, followed by hearing aids and cardiac stents. A total of 57 vendors supplied IOL, 53 vendors supplied hearing aid, and 45 supplied cardiac stents (refer to Table 35). Vendors offering the lowest price per unit were awarded unless there are special circumstances for which the second-lowest price will be offered.

Table 35: Number of Vendors Awarded by HA Type

HA type	Number of vendors had been awarded
Breathing machines & Oxygen concentrator	48
Cardiac stents	45
Hearing aid	53
Intraocular lens	57
Joint arthroplasty	45
Limb prosthesis and orthosis	40
Nutritional support	34
Pacemaker	12
Spinal surgery prosthesis and implant	27
Wheelchair	62

The numbers are not mutually exclusive. One vendor may supply a number of treatment items.

9.8 Summary

The services are delivered through a strong public-private partnership in the provision of PHC. Many GPs and private laboratories involved in this scheme and distributed throughout the country. However, KKs are still the primary service provider in less densely populated areas and areas where private providers are scarce.

Highlights

The uniqueness of the PeKa B40 scheme is that it promotes public-private partnership in the provision of healthcare. Public facilities have a high workload and are overcrowded, with patients experiencing long waiting times. By sharing the care with private facilities, it will minimise these issues and attract the beneficiaries to utilise the services.

By engaging GPs and private laboratories in this scheme, it has enhanced the accessibility to healthcare. Nevertheless, since GPs and private laboratories are more distributed in urban areas, the rural areas which are far from GPs are still covered by the nearest KKs. The scheme has shown a good public-private partnership model that enhances the accessibility to healthcare for the B40 population as well as decongests the public facility.

CHAPTER 10: REFERRAL FOR INDICATED CASES

Although referrals should be made based on clinical judgement, it was decided that certain indications warrant referrals. The indications of referrals are as listed below:

1) Newly diagnosed NCDs (ND)

a. Newly diagnosed DM
b. Newly diagnosed HPT
c. Newly diagnosed anxiety
d. Newly diagnosed depression

2) Existing but uncontrolled NCDs (EU)

a. Existing uncontrolled DM
b. Existing uncontrolled HPT
c. Existing uncontrolled anxiety
d. Existing uncontrolled depression

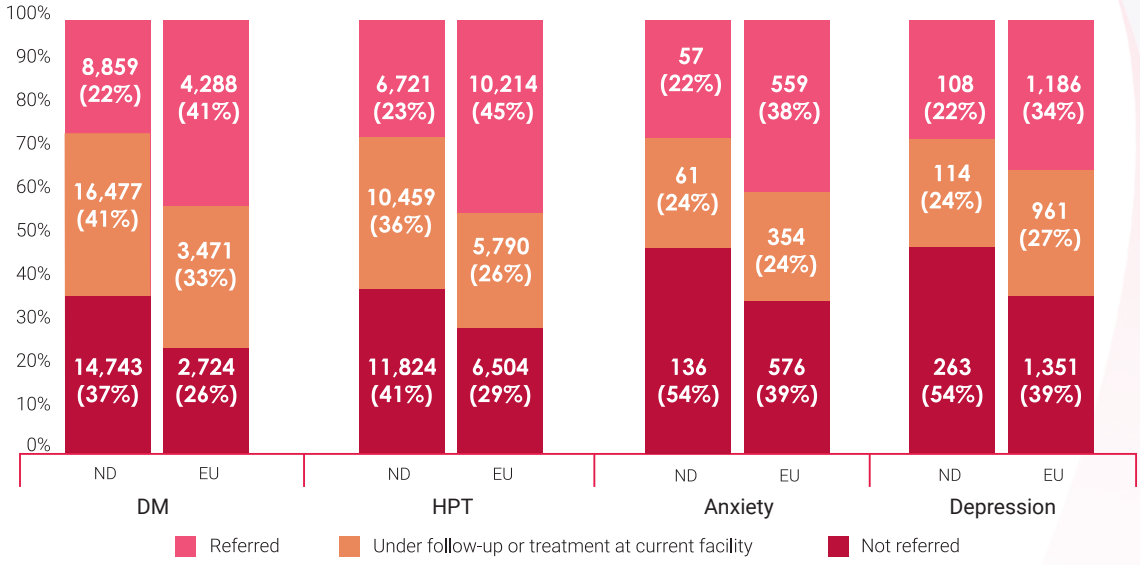
These indications were chosen based on the Malaysian Clinical Practice Guideline (CPG) by MOH. Below are the definitions of the newly diagnosed and existing uncontrolled NCDs for the referral indications:

Table 36: Definitions of Referral Indications

Diagnosis	Newly diagnosed	Existing uncontrolled
Diabetes mellitus	No existing DM with HbA1c ≥ 6.3	Existing DM with HbA1c > 8.0
Hypertension	No existing HPT with systolic BP ≥ 140 and/or diastolic BP ≥ 90	No existing HPT with systolic BP ≥ 160 and/or diastolic BP ≥ 100
Anxiety	No existing mental illness with a GAD score ≥ 10	No existing mental illness with a GAD score ≥ 10
Depression	No existing mental illness with a PHQ score ≥ 10	No existing mental illness with a PHQ score ≥ 10

In this section, we will measure the percentage of referrals according to the indications. The percentage of referrals will indicate the treating doctor's compliance towards good clinical practice and quality service. Besides referrals, there are other patients' disposition[4] available as an option in the system. Doctors may also indicate if the patients are treated at their current facility or are already under follow up, thus, not requiring a new referral.

Figure 19 illustrates the overall referral pattern by disease indications, and Figure 20 shows the trend of the non-referral cases by months for at least one indication.



Footnote:
ND: Newly diagnosed diseases
EU: Existing uncontrolled diseases

Figure 19: Overall Referral Pattern by Disease Indications

The overall percentage of referrals by disease shows a similar referral pattern across all four NCDs, where there was a slightly higher percentage of referrals among newly diagnosed indications than existing uncontrolled indications. There was also a higher percentage of non-referrals for the existing uncontrolled indications compared to newly diagnosed cases. The percentage of other dispositions was similar for anxiety and depression but higher for newly diagnosed DM and HPT.

[4] Other disposition refers to those treated in current facilities and those who were already under follow-ups.

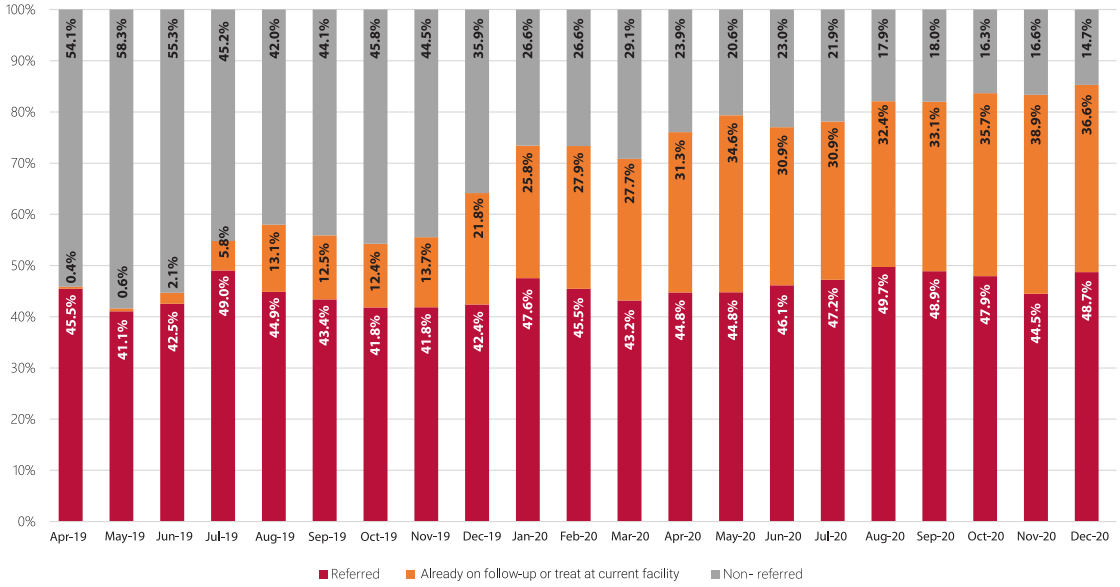


Figure 20: Referral Trend by Month for At Least One Indication

The monthly trend of non-referral cases was markedly decreased from 54.1% to 14.7%. On the other hand, the trend of "other disposition" was increased from 1% to 36%. One of the major contributing factors for this increasing percentage of other dispositions category is due to the system change that took place in August and December 2019 whereby, the options for "treat at current facility" and "already under follow up" were added, which were categorised as "other disposition".

10.1 Intervention by Strategic Purchasing (SP) Team for Non-Referral Cases

As part of the quality management, an intervention was made to the non-referral cases to ensure appropriate services were given to PeKa B40 beneficiaries. The intervention was done by sending out reminder emails together with an excel sheet of the list of non-referral cases for the providers to either call up the beneficiaries and do the referral accordingly or give reasons for the non-referrals. This intervention was carried out by the Strategic Purchasing (SP) team.

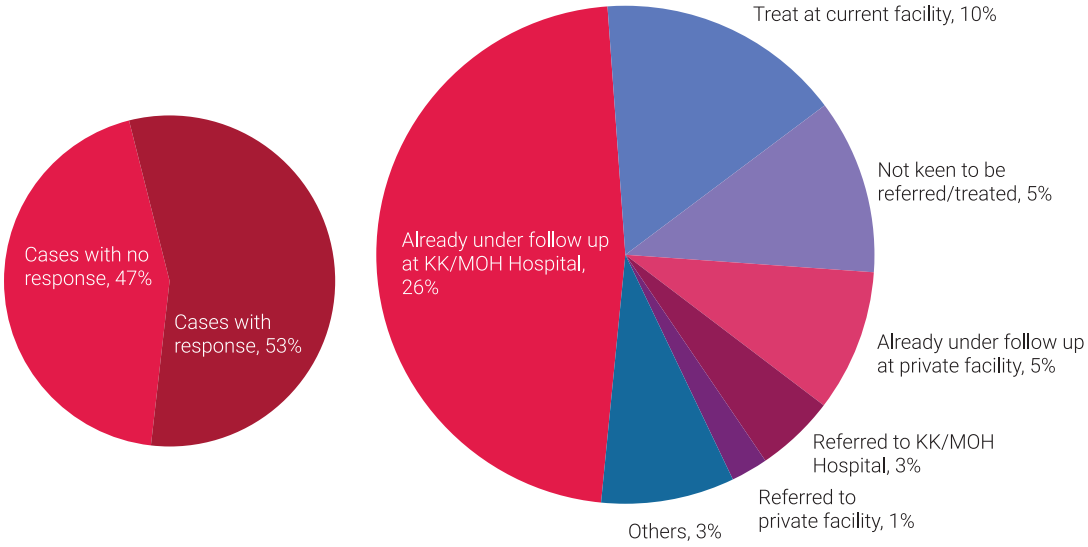


Figure 21: Findings on Action Taken Post Intervention

Figure 21 shows the SP team's findings on the action taken following the interventions or reasons for the non-referrals. The majority of reasons for the non-referral cases with response were due to other dispositions such as "already under follow up" (26%), followed by "treated at current facility" (10%), "not keen to be treated/referred" (5%) and "already under follow up at private facility" (5%). 3% was referred to KKs/ MOH Hospitals, and 1% was referred to private facilities following the interventions. From this, it can be concluded that most of the non-referrals contributed to the "other disposition" categories, whereas referrals remained at 20-40% of cases with indications.

CHAPTER 11: ACTIVITIES

PeKa B40 Promotional Activities

Various activities were carried out to promote PeKa B40 to the target group via multiple platforms, which include media launch, print and electronic media, social media, outdoor advertisements, on-ground activities, exhibitions, interpersonal communication, publications and distribution of promotional materials, as well as sharing information through the PeKa B40 website.

11.1 PeKa B40 Media Launch

The Minister of Health officiated the PeKa B40 media launch on 28th January 2019 before its implementation on 15th April 2019. The media launch was intended to create 'brand recall' and awareness among the media and public on the upcoming government healthcare initiative, which is PeKa B40. After the media launch, many stakeholders' engagements were done to obtain feedback from the stakeholders and to disseminate the necessary information as wide as possible to ensure a smooth implementation on 15th April 2019.

11.2 Campaigns, Advertisements and Reports in Print & Electronic Media

Information on PeKa B40 was shared on TV channels, radio stations and newspapers using various methods such as news coverage, advertisements, interviews, crawlers, and radio announcements as listed below:

Table 37: Types of Media Exposure

No.	Types of Media Exposure	Platform
1.	News coverage, advertisements, and interview	Harian Metro, BERNAMA, New Straits Times, Berita Harian, Malay Mail, The Star, Sin Chew Daily, Malaysian Nanban, online news portals
2.	Advertisements	Medik TV in all hospitals
3.	TV Interview	RTM, TV3, BERNAMA, Astro Vaanavil, Astro Awani, TV AlHijrah
4.	TV News Coverage	RTM, TV3
5.	News Crawler	RTM, Astro Awani, TV3
6.	Radio Interviews	RTM national and states stations & IKIM
7.	Radio Public Service Announcement (PSA)	Hot FM, RTM
8.	Blogs	Rizal Hakimm, Ben Ashaari, Semakan Online
9.	TV Advertisements 30 sec	Television
10.	Radio Ads 30 sec	Radio

TV and Radio Exposure

Newspaper Exposure

HMETRO.COM.MY

Bantuan ringan beban

KEADAAN tulang belakangnya makin serius dan perlu dibedah segera, tetapi...

HMETRO.COM.MY

Cerita gembira tiga pesakit

INSIDEN jatuh dari kerusi ketika berusia 12 tahun menjadi penyebab Ng Sau...

Nasional

351,814 terima manfaat PeKa B40

Saringan kesihatan seluruh negara habiskan kos RM73.77 juta

Jumlah saringan kesihatan

11.3 Interpersonal Communication

Interpersonal communication is face-to-face communication which includes briefings, talks, forums, or discussions. Briefings and talks about PeKa B40 were done almost weekly on various occasions, like community programs organised by the government, private agencies, and NGOs. A PeKa B40 awareness booth was also set up in these programs and in certain areas where forums are held. The public can check for eligibility at PeKa B40 booths, enquire regarding the scheme and get information from the forum panellist when they go to such events. Listed below is the summary of events participated by PeKa B40 organised by organisations or community groups.

Table 38: Event Participation by PeKa B40

1. *Hari Bersama Pelanggan/Komuniti.*
   Pejabat Setiausaha Kerajaan Negeri, Ahli Dewan Undangan Negeri, Parlimen, Jawatankuasa Pembangunan dan Penyelarasan Dewan Undangan Negeri (JAPERUN)
2. Community Programs organised by various mosques nationwide
3. Village Community Management Council (MPKK)/*Kawasan Rukun Tetangga (KRT)*
4. Wellness, Women, Welfare (3W) Program, ROSE (Removing Obstacles to Cervical Screening) Program, One-Stop Help Centre Program (KAWAN)
5. *Ahli Lembaga Pelawat Hospital*
6. Convention and Symposium
7. Community Programs organised by Social Welfare Department, RISDA, Information Department, LKIM & LPP
8. Private Sector and NGO Organised Program: Muslim Volunteer Malaysia, Tokyo Marine Life Insurance & *Bank Simpanan Nasional*
9. Coordinators and Volunteers of Communication for Behavioural Impact (COMBI) and Wellness Hub
10. Community Programs organised in *Program Perumahan Rakyat (PPR)/Perumahan Awam (PA)*
11. Medical Camps, Special Day Celebrations and Carnivals
12. *Program Kampungku Sihat* by MOH

11.4 Promotion via Outdoor Advertising (Out of Home-OOH)

Promotion for PeKa B40 via outdoor advertising includes billboards, digital display, bus wrap and banner. The advertisements were displayed in selected areas with a high density of PeKa B40 beneficiaries with undiagnosed NCDs.

11.5 Campaigns and Promotions on Social Media

Besides traditional media, PeKa B40 also used digital platforms such as Facebook, Instagram, Twitter, and Google Ads. The target group for these platforms is the B40 group with internet access, uses a smartphone, and has family members active in social media.

Various messages and information were shared through this platform, such as recipients' eligibility, PeKa B40 benefits, the importance of health screening, the latest data analysis associated with NCDs, healthy lifestyle practices, COVID-19 and many more. On the website, recipients or their family members can check for eligibility using their IC number.

Besides promoting daily to reach as many people as possible, queries and feedbacks were also filled by recipients and their family members. Inquiries received through these social media platforms were attended to within 24 hours by a dedicated social media team.

11.6 Distribution of Promotional Collaterals

The publication of promotional materials is essential to convey information to the target group and as supporting materials to further emphasise the messages or information presented. The promotional materials include:

a. Poster, tent card, and infographics
b. Pamphlets and flyers in 5 different languages (Malay, English, Mandarin, Tamil and Kadazan Dusun)
c. PeKa B40 Brand Video 4 minutes, Promo Video 30 seconds and TV commercial 30 seconds
d. Radio jingles 30 seconds
e. Bunting and banner
f. e-Posters and e-pamphlets

In addition to online sharing, printed promotional materials such as posters, brochures and tent cards were also sent to all State Health Departments, health clinics through the District Health Offices, all state hospitals, Urban Transformation Centre (UTC), Rural Transformation Centre (RTC), ministries and agencies closely associated with the B40 group such as the Social Welfare Department, Information Department, RISDA, FAMA, FELDA, LKIM, Mydin hypermarkets and supermarkets, KK Super Mart and many more. The collaterals' softcopy designs were also shared with all stakeholders to enable them to publish or print the materials themselves when the need arises.

11.7 PeKa B40 Health Screening Outreach Program

This program has become an important platform to provide opportunities for the B40 group to undergo free health screening. It was conducted nationwide from May 2019 to March 2020 in collaboration with agencies related to the poor population, PeKa B40 registered public and private clinics and laboratories, and the local communities.

Central level agencies engagement sessions were held to get buy-in, approval, and support. Further engagement sessions were organised with state-level officers for program planning and implementation. Discussions and site visits with community leaders, service providers and local community volunteers were carried out.

The targeted group was encouraged to do health screenings during the outreach program. Promotional activities were executed at the community level to ensure their attendance. It was done via personal invitation letters, short messaging service (SMS), printed promotional collaterals, WhatsApp, social media announcements, local radio, newspapers as well as public announcements and, in certain areas, awareness talks at the mosque.

As of 31st March 2020, a total of 8,858 recipients have been screened through 49 health screening outreach programs nationwide. These outreach programs organised by ProtectHealth had given GPs and the MOH clinics an overview and served as a guide for them to do outreach programs on their own thereafter.


PeKa


PENDAFTARAN

11.8 PeKa B40 Website

The PeKa B40 website (www.pekab40.com.my) was created on 1st April 2019 to enable recipients, GPs and the public to obtain information about PeKa B40. Here, the BSH recipients can check their eligibility, benefits offered by the scheme, list of PeKa B40 clinics nationwide, registration of GPs as PeKa B40 Clinic, frequently asked questions, media reports, and call centre contact to obtain further details related to the scheme.

11.9 Frequently Asked Questions (FAQ)

A set of questions and answers relating to PeKa B40 was prepared. It was used as the main reference by program spokespersons nationwide on any platform. FAQ ensures messages are conveyed uniformly and to avoid confusion. The FAQ was also included on the website.

11.10 Smart Partnership with Hypermarket and Super Mart

Smart partnership for PeKa B40 was a collaborative effort between MOH and two giant retail companies, Mydin and KK Super Mart. With numerous Mydin hypermarkets and hundreds of KK Super Mart stores nationwide, information on PeKa B40 was displayed throughout their premises and on digital platforms. These stores have many customers from the middle to the lower-income group. The promotion was done using digital display, jingles, poster placement in stores, as well as on their social media platforms. A memorandum of understanding (MoU) event was held to commemorate this collaboration.

11.11 Sentiment Analysis

Overall, PeKa B40 has received a lot of positive feedback according to the sentiment analysis that was gathered from a media monitoring tool. The result of the sentiment is shown below:

Table 39: Feedback Categories

Year	2019		2020	
Sentiment	**News**	**Social Media**	**News**	**Social Media**
Positive	97	182	26	0
Neutral	398	31	264	386
Negative	8	19	0	55
Total	503	232	290	441

CHAPTER 12: PAYMENT AMOUNT BY BENEFITS

12.1 Introduction

This chapter discusses the amount paid to providers and beneficiaries. The recipients must undergo HS to be eligible for HA, CCTI, and TI. A maximum limit of RM20,000 is allocated to the recipients for purchasing medical equipment. As for CCTI, a maximum limit of RM1,000 is allocated to cancer patients who completed their treatment at MOH hospitals. Meanwhile, to relieve the burden of paying for transportation whenever recipients have to travel to receive treatment at MOH hospitals. Only recipients of HA and/or CCTI are entitled to TI. The maximum amount of assistance that can be received is RM500 for Peninsular Malaysia and RM1,000 for Sabah/Sarawak/WP Labuan.

12.2 Amount Paid for All Benefits

During this period, a total of RM62.4 million had been paid for all four benefits. The highest cost paid was for HS, with a grand total of RM38.5 million. The total amount paid in 2019 and 2020 were RM13.6 million and RM25.0 million, respectively. Meanwhile, the total amount paid for HA was RM20.9 million, with RM1.8 million spent in 2019 and RM19.1 million spent in 2020.

Table 40: Total Paid for Benefits

Intervention month	2019	2020	Total	%
HS	RM13,549,264.00	RM24,954,214.00	RM38,503,478.00	61.7
HA	RM1,784,609.00	RM19,074,211.00	RM20,858,820.00	33.4
CCTI	RM360,900.00	RM1,206,300.00	RM1,567,200.00	2.5
TI	RM610,608.00	RM876,013.00	RM1,486,621.00	2.4
Total	**RM16,305,381.00**	**RM46,110,738.00**	**RM62,416,119.00**	**100**

Price negotiations with vendors was an effort to bring down the cost of Drug-Eluting Stent (DES). Since 1st July 2020, the price for DES was successfully reduced for most of the DES brands and specifications. The total payouts for DES prior to 1st July 2020 was RM2.1 million. Starting from 1st July 2020, the cost of DES had been reduced, and the estimated cost saving for DES during this period (1st July 2020 to 31st December 2020) was about RM37,800.

Highlights:

From 15th April 2019 till 31st December 2020, the total payouts for all benefits of PeKa B40 scheme was RM62.4 million, with the highest spending on health screening.

For HA, there was an effort to reduce the cost by price negotiation of DES. Starting from 1st July 2020 till 31st December 2020, the cost of DES payouts has been successfully reduced to about 38.7% of the original expected cost.

CHAPTER 13: DISCUSSION

13.1 Introduction

The relationship between social disadvantage and ill-health is complex. Among the usual health and social determinants are the fact that the poor cannot afford the cost necessary for good health, such as healthy foods and healthcare. In addition, poverty is almost always related to low educational levels, limiting their access to information on appropriate health-promoting practices, which may eventually lead to a positive attitude towards health. On the other hand, ill-health also contributes to poverty partly due to the impact of paying out-of-pocket (OOP) at the point of seeking care, especially for those without insurance, spending on transportation and any additional indirect costs that might be incurred. It can also be due to the considerable loss of family income if it involves the family's breadwinner.

In recent decades, NCDs have become a growing public health concern globally. It contributes to the major cause of premature mortality in many countries, including Malaysia. The UN sustainable development goals (SDGs) for 2030 include a goal "to reduce by one-third of the premature mortality from NCDs" (target 3.4) (United Nations, 2015). Among the WHO NCDs action plan, 2013-2020 global targets are relative reduction of mortality attributed by NCDs by 25%, and reduction of risk behaviours such as smoking, alcohol and physical inactivity (World Health Organization, 2013). To work towards achieving the SDGs, it is important to understand the magnitude and risk of NCDs among the disadvantaged group who may have less access to healthcare and intervention from preventable health determinants, which directly affect their health status.

The relationship between NCDs and poverty received a high level of recognition and is a major challenge to development. Evidence showed a significant association between NCDs and socioeconomic status (SES), especially in low to middle-income countries (Allen, 2017). The poor are more vulnerable to NCDs for many reasons, including material deprivation, psychosocial stress, a higher level of risk behaviours, unhealthy living conditions, limited access to high-quality healthcare and reduced opportunity to prevent complications (Tunstall-Pedoe, 2016).

13.2 B40 Population in Malaysia

B40 population are those in the lower strata income group, commonly referred to as low SES. Department of Statistics Malaysia (DOSM) recently reported the incidence of absolute poverty in Malaysia in 2019 at 5.6% (Department of Statistics Malaysia, 2020). Based on unpublished BSH data, about 4.4 million B40 population applicants and their spouses aged 40 years and above registered for the BSH benefits, which comprised approximately 13.6% of the total population.

13.3 Enhanced Access to Healthcare by Public-Private Partnership

The PeKa B40 initiative targets to reduce inequalities in health among the B40 population through the four benefits initially offered during its take-off in 2019. The determinants of health utilisation, such as access and distance to healthcare for health screening, are provided by options to choose services closer to home, removing the financial barrier to access free health screening at private facilities, removing the social barrier such as access to GPs with less congestion and increasing the number of service providers for more options by establishing public-private partnership. GPs and private laboratories nationwide are engaged in the unified IT system, BMS, providing health screening services and referral for treatment to PeKa B40 beneficiaries. This enabled monitoring of the quality of healthcare service provision across both sectors for the marked success in effective public-private partnership strategy.

The public-private partnership enhances the delivery of primary health care services, which primarily detects undiagnosed NCDs and referrals for treatment. Besides, it has also successfully provided a setting for a population-based health screening programme for the B40 population as opposed to existing opportunistic screening, which was identified as the gap in the delivery of primary public healthcare. It has shared the burden of high workloads by decongesting patients at the Government Health Clinics, which ultimately enhances the quality of healthcare deliveries.

13.4 NCDs Among PeKa B40 Beneficiaries

NCDs are reported as the main contributors to the Years of Life Lost (YLL) and Years Lived with Disability (YLD), which both constitute the measurement of Disability-Adjusted Life Years (DALY). In 2014, the Burden of Disease (BOD) Study reported that cardiovascular and circulatory diseases contributed to 20.8% of total DALY, with malignant neoplasm contributing to 9.4%, DM contributing 7.8%, and mental disorder contributing 7.2% of total DALY in Malaysia (Institute for Public Health, 2017).

Health screening is primarily to determine the health of B40 beneficiaries, particularly with regards to the five main NCDs (DM, HPT, HCL, anxiety and depression), and to address the findings by NHMS that the prevalence of undiagnosed DM, HPT and HCL, which were increasing over the last 10 years (Institute for Public Health, 2019). Undiagnosed NCDs may lead to delayed treatment, which may impose more debilitating or disabling conditions on the individual, such as retinopathy, arthropathy, stroke, heart failure, and kidney failure. In addition, health screening will also identify the existing NCDs that are poorly controlled, which may lead to undesirable complications stated above if it is not intervened. Both need intervention, whereby the beneficiaries were referred for appropriate treatment. The common existing morbidities were HPT, HCL and DM with the prevalence of 56.2%, 42.2% and 31.6%, respectively, higher than the prevalence reported by NHMS for the same age group of B40 with the prevalence of 18.2%, 32.9% and 25.1%, respectively (Institute for Public Health, 2019).

13.4 NCDs Among PeKa B40 Beneficiaries (contd.)

On the other hand, the detection of newly diagnosed DM, HPT, HCL, anxiety and depression were 10.4%, 13.8%, 29.8%, 0.6% and 1.5%, respectively. The unpublished NHMS report found the prevalence of unknown DM, HPT and HCL were 12.3%, 20.2% and 28.4%, respectively (Unpublished NHMS report, 2019). The prevalence of newly diagnosed DM and HPT among the PeKa B40 beneficiaries were slightly lower than NHMS, although the detection of HCL is slightly higher.

Other NCDs, which is a growing public health concern globally, are mental disorders. It affects the economic and mental well-being of the individual and their family. NHMS 2015 reported that the prevalence of mental disorders is 29.2% among adults, 18 years old and above (Institute for Public Health, 2015). Depression is the most common mental health disorder, which is an emerging public health concern (World Health Organization, 2001). Lower SES is vulnerable to mental issues contributed by the challenging life that they experience. The prevalence of depression among B40 aged 40 years and above reported by NHMS 2019 was 2.1%. Overall, the prevalence among PeKa B40 beneficiaries was 2.5%, where more than half (1.6%) of the undiagnosed cases were detected through PeKa B40 health screening.

The survival rate of cancer patients is higher if the cancer is detected early, patients receive treatment at the early stages of cancer, and patients comply with the complete treatment. Besides providing some financial aid for cancer patients, CCTI and TI primarily aim to encourage treatment compliance. About 14% of total CCTI beneficiaries were in stage I, and 19% were in stage II, which are generally expected to have a better prognosis and higher survival rate. However, about 32% were already at stage 4.

In comparison with NHMS, there is a higher prevalence of existing cases of NCDs among PeKa B40 beneficiaries but slightly lower detection of newly diagnosed cases. This may indicate that those with morbidity were more aware and more likely to utilise the services. Furthermore, those who needed other benefits like HA, CCTI and TI are required to have health screenings before approval.

13.5 Risk Factors Among PeKa B40 Beneficiaries

Many previous reports indicate that low SES are more likely to use tobacco products, consume unhealthy food, be physically inactive and overweight or obese (Bartley, 2000). NHMS 2019 reported that current smokers' prevalence was higher among the B40 group, with 23.9% vs 15.9%, among the T20. However, only 10% of PeKa B40 beneficiaries aged 40 and above were current smokers. The more affluent groups are relatively less active, with a prevalence of inactivity among B40, M40 and T20 at 23.6%, 25.3% and 30.7%, respectively. However, only about 4.2% of PeKa B40 beneficiaries aged 40 and above were inactive. The majority were minimally active. The prevalence of obesity among PeKa B40 is 19.1%, with a BMI of 30 and above, which is almost similar to NHMS (NHMS reported 18.4% obesity among B40 aged 18 years old and above, which is higher than T20 (11.4%)).

13.6 Conclusion

The PeKa B40 scheme primarily aims to address the growing burden of NCDs, focusing on the B40 population aged 40 years old and above. From April 2019 until December 2020, about RM62.4 million had been paid for all four benefits offered, of which it had successfully screened 457,462 beneficiaries, and 92.3% had completed the second screening.

The highlighted impact of the PeKa B40 is that we gained a better understanding of the magnitude of risk factors among the B40 population, which may eventually lead to the development of NCDs. Most importantly, it had successfully detected a significant percentage of five newly diagnosed NCDs, which is the focus of the PeKa B40 scheme, whereby interventions were offered by referring for further management. The individuals who have been operated on and have received the HA should lucidly improve their health or minimise disability, thus improving their quality of life. The TI provided along with HA and CCTI had improved their access to healthcare and increased the compliance to hospital visit schedules.

Overall, the scheme has successfully improved the accessibility to healthcare, reducing out-of-pocket (OOP) health expenditure for certain services such as HS and purchase of HA among the B40 beneficiaries, and successfully established the public-private partnership for the defined healthcare service delivery. It is the first scheme of its kind implemented via ProtectHealth, a not-for-profit company under MOH, to strategically purchase health screening services from both the public and private sectors.

13.7 Limitations

PeKa B40 beneficiaries for HS are not randomly selected. The visits are very much influenced by health-seeking behaviours, outreach programs, the need for medical attention and the need for health benefits. Comparatively, NHMS was a well-structured population-based survey with a complex multistage random sampling methodology. Thus, the samples were representative of the entire population. However, the B40 population aged 40 years and above selected in the NHMS sample was rather small, so the interpretation should be cautious of errors. The comparison with the finding of PeKa B40 should be interpreted with caution, considering the differences in population characteristics, methodology and inclusion criteria. Although the screened population for PeKa B40 consisted of a larger sample size, considering the sampling bias, PeKa B40 might not represent the entire B40 population. Thus, the inference is limited.

13.8 The Way Forward and Recommendations

These findings can be taken as baseline information to further revise the work process and future expansion plan, revise and formalise the performance or quality indicators and their standards, and propose a methodology for measuring outcome, which will reflect the scheme's impact. The performance and quality of a program are typically measured by input-process-output/outcome indicators against the set standards. On the other dimension, indicators would reflect the efficiency and effectiveness of the program. These indicators are mostly monitored closely by external parties, including by Government Monitoring Evaluation Committee (GMEC).

From the analysis in the earlier sections, we identified a few processes that had been remedied to improve the performance and quality of the PeKa B40 scheme. For example, to reduce the incidence of clotted blood samples, especially in the more rural areas, SP Department sent reminders to the relevant GPs with suggestions. One of the measures taken by the GPs that should be applauded was proactively purchasing a centrifuge to process the samples before sending them to laboratories to reduce the incidence of clotted samples. Also, CMD had identified that some of the issues regarding prolonged TAT for HA claims processing could be mitigated by establishing a Vendor Module in the BMS. Moving forward, apart from the development of a vendor module, other identified improvements needed in the BMS to help speed up the process for claims processing include a flagging system for the discrepancy in diagnosis, identification of providers from the Providers' Watchlist and finalising the lab data integration.

The initial budget received was only RM20 million, and thus, the target for health screening was 200,000. Most of the states in the Northern Region achieved the targets. Unfortunately, the achievements among the densely populated states like Selangor and Wilayah Persekutuan Kuala Lumpur were relatively low, especially among the working groups in the more urban areas. Since the PeKa B40 initiative started, only approximately 457,462 beneficiaries (about 10% of total BSH) aged 40 years and above had been screened. The focus of PeKa B40 has always been to increase the health screening number to detect and treat NCDs early. Prior to the MCO, ProtectHealth had done several outreaches with local communities. For example, conducting on-site screening with local leaders in low-cost flats in areas such as Mentari Court and Petaling Jaya. These were done with the participation of registered PeKa B40 GPs in the area. Concurrently, continuous promotions were carried out through television, radio, social media, as well as banners, posters and flyers given through the providers. However, the number of health screenings drastically reduced following the MCO period in the first quarter of 2020. To increase the screening rate, ProtectHealth had doubled its efforts to promote health screening via multiple platforms, including social media such as Facebook, Twitter and Instagram. Hopefully, ProtectHealth will be able to resume outreach programs, especially in areas where screening numbers are low such as Klang Valley and Selangor, once the MCO is lifted.

Unfortunately, aside from the target based on the budget allocated, the screening number until 2020 is still a small percentage compared to Malaysia's overall B40 target population. There is still work to be done in securing more budget from the government so that more people can be screened. Hopefully, with the successful implementation of this pilot, more evidence-based data can be churned, specifically in terms of cost-effectiveness and the long-term impact of this scheme on cost-saving for the government's healthcare expenditure. In addition to that, ProtectHealth will need to double its effort in promoting PeKa B40, exploring the best method of reaching the target population and maximising the effort through outreach programs in the more underserved areas.

Public-private partnership through PeKa B40 helped to improve the B40 patients' physical and financial accessibility to private primary health care and thus improve the coverage for health screening. GPs and private laboratories engagements complimented the primary health care services provided by the government clinics and help to decongest the public facilities. A total of 1,899 GPs registered, whereby most states had more than four GPs, was set by GMEC as the initial target. There are six main private laboratories with more than 800 branches registered and actively participated in this scheme, although no target number was set for laboratories registration. These laboratories are responsible for processing lab samples from both the GPs and the KKs. At the moment, the number is sufficient to carry out screening but moving forward, with the expansion of the benefits package, ProtectHealth may need to consider promoting more GPs and laboratories to participate in the scheme. The provider payment mechanisms used, Fee for Service (FFS), effectively increased the providers' participation (including private GPs and laboratories) in outreach programs, especially in the more rural areas.

In moving forward, there needs to be an improvement in terms of continuity of care for these patients. Due to budget constraints, these patients could not be treated by the same private providers that had screened them and needed to be referred to the public sector clinics for further management. As a result, some patients missed follow-ups, and some high-risk patients could not be screened again.

Thus, it is crucial for ProtectHealth to continue to pursue its goal to do risk profiling of all the screened beneficiaries to identify the high-risk group for future repeat screening, establish the Wellness Module to manage high-risk beneficiaries to prevent their health from deteriorating and finally, to expand the PeKa B40 benefit package to include the treatment component specifically for NCDs. Improving the quality of care will also require selecting and accrediting providers established under the Medical Audit initiative to help identify quality providers.

In terms of expenditure, PeKa B40 has attracted the sicker population to come forward for screenings as shown in the analysis for a known case, compared with NHMS data. This is due to the moral hazards of having access to other benefits, specifically HA, once the beneficiaries are screened. As a result, the total expenditure for HA had exceeded its initial target and even exceeded the health screening expenditure, which was the main aim. In moving forward, there is a need to relook at the lifetime limit for HA, considering evidence-based data to minimise the moral hazard and increase effort in promoting health screening and early treatment in the future.

The latest NHMS data showed that younger age groups are increasingly at risk for NCDs, and a higher percentage are still undiagnosed. Considering this fact, PeKa B40 should also consider lowering its target population in line with this evidence to include younger age groups for early health screening. As the saying goes, "Prevention is Always Better than Cure", early screenings will enable earlier treatment and prevent complications, which will eventually improve the beneficiaries' quality of life as their health status improves.

Hopefully, with all the effort through PeKa B40 and continuous improvement to this scheme, ProtectHealth will be able to contribute to the development of healthy Malaysians towards a better Malaysia in the future.

ACKNOWLEDGEMENT

This PeKa B40 2019-2020 Report is the first publication by ProtectHealth to report on the achievements of the PeKa B40 scheme, which was implemented on 15th April 2019. The report publication team would like to thank everyone who contributed to this endeavour. Special acknowledgement goes to the Honourable Minister of Health, Dato' Sri Dr. Adham Baba, for his support on the implementation of the scheme. We would also like to acknowledge each of the Board of Directors team members; Tan Sri Dato' Seri Dr. Noor Hisham Abdullah, Dato' Mohd Shafiq Abdullah, Datin Rosni Mohd Yusoff, En. Johari Abdul Muid and En. Nurhisham Hussein for their tremendous support, valuable time, and guidance to ensure the PeKa B40 Scheme can be successfully implemented. We would like to thank Datuk Dr. Hishamshah Mohd Ibrahim, Deputy Director General (Research and Technical Support) and Planning Division, Ministry of Health (MOH), for the continuous support and encouragement. A special thank you also goes to all the MOH Divisional Directors, particularly the Health Education Division and Corporate Communication Unit, for providing a platform to promote PeKa B40 via media.

We are very grateful for the support and participation of all the State Health Directors and Hospital Directors in ensuring the smooth implementation of this scheme at the state, district and hospital levels. We would also like to thank ProtectHealth Partners, which include General Practitioners, Private Laboratories as well as all government and private agencies, non-government organisations (NGOs), promotional partners (KK Super Mart and Mydin), for their participation, support and cooperation in promoting and implementing this scheme for the benefits of the B40 group. Without them, PeKa B40 would not have been possible and be as successful as it is today. Last but not least, sincere gratitude goes to all PeKa B40 2019-2020 Report advisors for sharing their expertise, guidance and time. Finally, we would like to extend our thanks to all the Head of Department and ProtectHealth Heroes, Director of the Institute for Public Health, National Institute of Health, MOH, who worked tirelessly to provide input/analysis and content to produce the first PeKa B40 Report. Thank you, everyone.

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