

Utilization of “*Skim Peduli Kesehatan untuk Kumpulan B40*” (PeKa B40) Programme among Felda Residence in Kedah, Malaysia: The Participation Rate and its Determinants

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ABSTRACT

INTRODUCTION: The Malaysian government has implemented the “Skim Peduli Kesehatan untuk Kumpulan B40” (PeKa B40) programme in response to the growing rate of non-communicable diseases (NCD) among the Malaysian population. This study aims to determine the participation rate of PeKa B40 programme utilization and its determinants. **MATERIALS AND METHODS:** This was a cross-sectional study designed at Felda Lubuk Merbau Kedah. A total of 237 participants were involved using the simple random sampling method from January-April 2023. Multiple logistic regression analysis was used to determine the determinants. **RESULTS:** The participation rate of PeKa B40 utilization among participants was 41.8%. The determinants of utilization of PeKa B40 programme were positively associated with age [Adj. OR: 1.06 (95%CI: 1.03, 1.10)], female gender [Adj. OR: 2.32 (95%CI: 1.15, 4.66)], presence of chronic disease [Adj. OR: 2.62 (95%CI: 1.28, 5.37)], persistent pain that mildly disturbs daily activities [Adj. OR: 3.30 (95%CI: 1.31, 8.33)], and high disturb daily activities [Adj. OR: 14.34 (95%CI: 2.18, 94.26)]. The determinants were also negatively associated with poor self-rate health [Adj. OR: 0.05 (95%CI: 0.01, 0.47)], intermediate self-rate [Adj. OR: 0.25 (95%CI: 0.06, 0.95)], and good self-rate [Adj. OR: 0.22 (95%CI: 0.06, 0.82)]. **CONCLUSION:** The participation rate of PeKa B40 among residents of Felda Lubuk Merbau was higher than at the national and state levels. Therefore, the government needs to advertise this programme and take more proactive steps to advertise the programme especially, to adult men. This programme needs to be extended to those respondents who are sick and need medical treatment.

Keywords:

Determinants, utilization PeKa B40 programme, Felda Residence

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INTRODUCTION

The Malaysian government has made significant efforts to address poverty and provide essential services to marginalized populations, in line with the Sustainable Development Goals (SDGs).¹ The government prioritizes delivering vital amenities, such as sanitation facilities, electricity, and clean drinking water, to improve living conditions and overall well-being. Additionally, the government recognizes the critical importance of healthcare in combating poverty and has implemented programmes and policies to ensure equitable access to healthcare services for low-income individuals and families.²

In 2015, Malaysia experienced an increase in fatalities

caused by non-communicable diseases (NCDs). Out of 154,000 total deaths recorded that year, approximately 113,400 (73.64%) were attributed to NCDs.³ The rise in NCDs in Malaysia can be linked to several factors, including an aging population, sedentary lifestyles, unhealthy eating habits, and a lack of awareness regarding preventive measures.⁴

To tackle the growing prevalence of NCDs, the Malaysian government in the Twelfth Malaysia Plan (2021) launched a plan prioritizing NCDs, focusing on cancer, diabetes, as well as mental health.⁵ The plan known as “*Skim Peduli Kesehatan for the B40 group*” (PeKa B40) programme was specifically designed to address NCDs among the

economically disadvantaged B40 group, i.e. those at the bottom 40% of total households income distribution in Malaysia averaging RM5250.00 monthly. It aims to provide financial support and equitable access to healthcare.⁶ This programme has four benefits, namely i) health screening, ii) eligible for health aid, iii) complete cancer treatment incentive, and iv) transport incentive.

Since it's launched in 2019, PeKa B40 was reported to have diagnosed many chronic diseases among the B40 community which was not diagnosed before such as diabetes mellitus (10.4%), hyperlipidaemia (29.8%), hypertension (13.8%) and mental health problem (1.6%).⁷ Even though this programme had proven the success in diagnosing several chronic diseases among the targeted community, however during the implementation of this programme there were only 40,119 B40 participants who underwent health screening exercise out of 800,000 eligible persons.⁸ Underutilization of health services was considered a significant factor that contributed to a substantial case of avoidable mortality and morbidity.

Although the programme began in 2019, the participation rate for health screening among eligible individuals was only 7.6%.⁹ Therefore, this study seeks to assess the participation rate of PeKa B40 programme utilization and identify the factors that influence residents of Felda Lubuk Merbau, Kedah.

MATERIALS AND METHODS

Study population

This descriptive cross-sectional study was conducted in the Felda Lubuk Merbau community in Kedah, Malaysia, between January-April 2023. Among the 17 Felda areas in the northern region of Malaysia, Felda Lubuk Merbau was randomly selected using simple random sampling as the sampling area. Permission was obtained from the community head prior to the study. Based on sampling calculations, a total of 237 participants were required, and the simple random sampling approach was employed throughout the sample selection process.

Sample size determination

The sample size was calculated using a sample size calculator available in Epi Info Software. The population of Felda Lubuk Merbau includes 2,000 individuals aged 40 years old and older. As of December 2022, the proportion of Malaysians utilizing the PeKa B40 programme was 14%.¹⁰ To achieve a statistical significance level of 5% and a statistical power of 80% while accounting for a non-response rate of 20%, a minimum sample size of 204 participants was required for this study.

Inclusion and exclusion criteria

Participants were selected based on specific eligibility criteria for the PeKa B40 programme. These included i) Malaysian citizen aged 40 years old, ii) receiving financial assistance from the government known locally as "*Sumbangan Tunai Rahmah (STR)*" (formerly "*Bantuan Sara Hidup (BSH)*"), iii) within the bottom 40% of total household income, and iv) consented to participate in the research. Exclusion criteria consisted of individuals who were i) deaf, ii) mute, iii) illiterate, or iv) unable to communicate in the Malay language. The study population for utilization of PeKa B40 was identified when they fulfilled the inclusion and exclusion criteria.

Questionnaire

Data collection was conducted at various community venues, including health clinics, mosques, and public halls, using convenience sampling. A briefing was held to explain the study goals to the target group. Interested individuals were gathered, and a comprehensive description of the research process was provided. Prior consent was obtained before conducting the data collection. Participants were assured of confidentiality, and the survey forms did not contain any personal information that could identify them. The utilization of PeKa B40 is operationally defined as the proportion of eligible B40 individuals aged 40 years and above who have accessed at least one of the scheme's benefits (health screening, medical equipment assistance, cancer treatment incentive, or transport aid) within a specified period.

The sociodemographic and health status questionnaire was adapted from the PeKa B40 questionnaire. It was developed by Corporation Sdn. Bhd., a wholly owned subsidiary of ProtectHealth Malaysia, which operates under the Ministry of Health Malaysia (MOH).^{6,11} The questionnaire consisted of three domains: i) sociodemographic (seven items, including age, gender, marital status, ethnicity, educational level, occupation, and partner's occupation), ii) health status (seven items, including the presence of chronic diseases, chronic diseases among family members, smoking status, body mass index, systolic blood pressure, diastolic blood pressure, and pulse rate), and iii) socio-economic status (two items regarding financial difficulties in buying necessities and means of paying for medical expenses).

The health-seeking behaviour questions were adapted from the Malaysian National Health Morbidity and Mortality Survey 2019 (Volume 2 – Healthcare Demand).¹² Structured questionnaires were used to collect data based on the healthcare demand module established by the Ministry of Health Malaysia. The assessment of health-seeking behaviour included nine items: i) self-rated health, ii) whether respondents felt ill, iii) if they received treatment from a healthcare practitioner, iv) they felt the need for treatment, v) whether they used medication without a healthcare practitioner's advice, vi) whether they received advice from non-healthcare sources, vii) if they sought alternative methods beyond the previous questions, viii) whether they experienced persistent pain for three months or more, and ix) whether pain disrupted their activities.

A trained research team member measured the blood pressure using a manual sphygmomanometer,¹³ measured the pulse rate at the radial artery,¹⁴ and tabulated the body mass index (BMI) by weighing the participants and measuring their heights.¹⁵

Self-rated health is a single-item indicator that predicts morbidity and mortality independently. In this study, respondents were asked to self-report their current general health status, with responses classified into a 5-point ordinal scale (excellent, good, fair, poor, and very

poor). The variables assessed in the sociodemographic, health status, socio-economic, and health-seeking behaviour questionnaires were based on the Health Belief Model (HBM). Data collection was carried out through face-to-face interviews.

Analysis

The data was cleaned and verified before being transcribed into Microsoft Excel for analysis using SPSS version 26. Descriptive analysis showcased numerical data through the mean and standard deviation, while categorical data was presented using frequency (n) and percentage (%). To compare the distribution of sociodemographic factors, health status, and socioeconomic variables stratified by the utilization of the PeKa B40 programme, an independent t-test was used for numerical independent variables, and a chi-square test was utilized for categorical independent variables. A univariate analysis was conducted to identify parameters associated with the utilization of PeKa B40 among Felda residents. Simple logistic regression was employed to determine odds ratios (OR) along with their corresponding 95% confidence intervals (CI). Independent variables that showed a significance level of less than 0.25 in simple logistic regression were selected for further analysis using multiple logistic regression, which accounted for potential confounding effects. The threshold for statistical significance was set at a p-value of less than 0.05.

RESULTS

A total of 237 respondents participated in this study. The participation rate of the PeKa B40 programme was 41.8%. Table I presents the distribution of sociodemographic factors, health status, and socioeconomic status, stratified by the utilization of the PeKa B40 programme.

Most participants in the study were Malay females, with an average age of 56.23 years (\pm 12.52). Most participants were female (59.5%), married (88.2%), Malay (98.3%), and worked in the agriculture sector (49.4%). Regarding health status, 57.0% of participants had chronic diseases, and 54.4% reported that their family members also had

chronic diseases. On average, respondents were classified as overweight, and the percentage of smokers was only 15.6%. However, both blood pressure and pulse rate measurements were within the normal range. Socioeconomically, most respondents indicated that they did not have financial difficulties in purchasing necessities, and 76.8% were responsible for paying their own medical expenses.

Table I: The distribution of the sociodemographic, health status and socioeconomics stratified by the utilization of the PeKa B40 programme (N=237)

VARIABLES	UTILIZE PeKa B40 PROGRAMME		TOTAL (n=237), n(%)	P-value
	Yes (n=99), n(%)	No (n=138), n(%)		
a) Sociodemographic				
Age, years (mean ± SD)	61.86 ± 11.19	52.20 ± 11.89	56.23 ± 12.52	<0.001 ^a
Gender:				
Male	37 (37.4%)	66 (47.8%)	103 (43.5%)	0.109 ^b
Female	62 (62.6%)	72 (52.2%)	134 (59.5%)	
Marital Status:				
Married	84 (84.8%)	125 (90.6%)	209 (88.2%)	0.178 ^b
Divorcee/Unmarried/Widowed	15 (15.2%)	13 (9.4%)	28 (11.8%)	
Ethnic:				
Malay	98 (99.0%)	135 (97.8%)	233 (98.3%)	0.493 ^b
Non-Malay	1 (1.0%)	3 (2.2%)	4 (1.7%)	
Education Level:				
Primary Education	31 (31.3%)	35 (25.4%)	66 (27.8%)	0.332 ^b
Secondary Education	63 (63.6%)	90 (65.2%)	153 (64.6%)	
Tertiary Education	5 (5.1%)	13 (9.4%)	18 (7.6%)	
Occupation:				
Self-business	10 (10.1%)	18 (13.0%)	28 (11.8%)	0.364 ^b
Professional	6 (6.1%)	10 (7.2%)	16 (6.8%)	
Agriculture sector	45 (45.5%)	72 (52.2%)	117 (49.4%)	
Housewife	38 (38.4%)	38 (27.5%)	76 (32.1%)	
Partner Occupation:				
Self-business	9 (9.1%)	11 (8.0%)	20 (8.4%)	0.193 ^b
Agriculture sector	2 (2.0%)	9 (6.5%)	11 (4.6%)	
Professional	49 (49.5%)	52 (37.7%)	101 (42.6%)	
Housewife	26 (26.3%)	49 (35.5%)	75 (31.6%)	
Other	13 (13.1%)	17 (12.3%)	30 (12.7%)	
b) Health Status				
Presence of Chronic Disease:				
Yes	79 (79.8%)	56 (40.6%)	135 (57.0%)	<0.001 ^a
No	20 (20.2%)	82 (59.4%)	102 (43.0%)	
Presence of Chronic Disease Among Family Members				
Yes	58 (58.6%)	71 (51.4%)	129 (54.4%)	0.277 ^b
No	41 (41.4%)	67 (48.6%)	108 (45.6%)	
Smoking Status				
Yes	17 (17.2%)	20 (14.5%)	37 (15.6%)	0.575 ^b
No	82 (82.8%)	118 (85.5%)	200 (84.4%)	
BMI, kg/m ² (mean ± SD)	27.18 ± 4.49	27.39 ± 4.38	27.30 ± 4.38	0.713 ^a
Systolic Blood Pressure, mmHg (mean ± SD)	134.03 ± 12.83	130.31 ± 11.99	131.86 ± 12.46	0.023 ^a
Diastolic Blood Pressure, mmHg (mean ± SD)	76.26 ± 8.96	79.21 ± 7.04	77.98 ± 8.02	0.005 ^a
Pulse Rate, beat per minutes (mean ± SD)	77.98 ± 9.32	81.57 ± 6.99	80.07 ± 8.22	<0.001 ^a
c) Socioeconomic				
Financial Difficulties to Buy Basic Necessities				
Yes	16 (16.2%)	25 (18.1%)	41 (17.3%)	0.695 ^b
No	83 (83.8%)	113 (81.9%)	196 (82.7%)	
Payers for Medical Expenses				
Self-paying	75 (75.8%)	107 (77.5%)	182 (76.8%)	<0.006 ^b
Employer	6 (6.1%)	21 (15.2%)	27 (11.4%)	
Family members	18 (18.2%)	10 (7.2%)	28 (11.8%)	

Notes:

*significant ($p < 0.05$)

^a independent t-test; ^b Chi-square test

There were significant age differences ($p < 0.001$), as well as notable differences in the presence of chronic disease ($p < 0.001$), systolic blood pressure ($p = 0.023$), diastolic blood pressure ($p = 0.005$), and pulse rate ($p < 0.001$) when comparing participants who utilized the PeKa B40 programme to those who did not. Additionally, there was a significant difference in self-payment of medical expenses ($p = 0.006$) between these two groups. Table II shows the distribution of health-seeking behaviour stratified by the utilization of the PeKa B40 programme.

Table II: The distribution of health-seeking behaviour stratified by the utilization of the PeKa B40 programme (n=223)

VARIABLES	UTILIZE PeKa B40 PROGRAMME		Total (n=223), n(%)	p-value
	Yes (n=95), n(%)	No (n=128), n(%)		
Self-rate health:				
Poor	4 (4.2%)	4 (3.1%)	8 (3.6%)	0.055 ^b
Intermediate	53 (55.8%)	52 (40.6%)	105 (47.1%)	
Good	30 (31.6%)	64 (50.0%)	94 (42.2%)	
Excellent	8 (8.4%)	8 (6.3%)	16 (7.2%)	
If you are ill, do you receive treatment from a healthcare practitioner?				
Yes	88 (92.6%)	121 (94.5%)	209 (93.7%)	0.563 ^b
No	7 (7.4%)	7 (5.5%)	14 (6.3%)	
Do you feel the need to receive treatment from a healthcare practitioner?				
Yes	86 (90.5%)	114 (89.1%)	200 (89.7%)	0.722 ^b
No	9 (9.5%)	14 (10.9%)	23 (10.3%)	
Have you used medication without the advice of a healthcare practitioner?				
Yes	11 (11.6%)	13 (10.2%)	24 (10.8%)	0.735 ^b
No	84 (88.4%)	115 (89.8%)	199 (89.2%)	
Have you received advice from others, aside from healthcare practitioners?				
Yes	21 (22.1%)	32 (25.0%)	53 (23.8%)	0.616 ^b
No	74 (77.9%)	96 (75.0%)	170 (76.2%)	
Have you received advice from other sources, such as the internet, TV, radio, applications, and others?				
Yes	45 (47.4%)	63 (49.2%)	108 (48.4%)	0.785 ^b
No	50 (52.6%)	65 (50.8%)	115 (51.6%)	
Have you done something other than the above?				
Yes	3 (3.2%)	5 (3.9%)	8 (3.6%)	0.766 ^b
No	92 (96.8%)	123 (96.1%)	215 (96.4%)	
Have you experienced persistent pain for 3 months or more?				
Yes	48 (50.5%)	6 (20.3%)	74 (33.2%)	<0.001 ^a
No	47 (49.5%)	102 (79.7%)	149 (66.8%)	
Does pain disrupt your activities?				
Highly disturb	11 (11.6%)	2 (1.6%)	13 (5.5%)	<0.001 ^a
Moderately disturb	10 (10.5%)	11 (8.6%)	21 (8.9%)	
Mildly disturb	28 (29.5%)	13 (10.2%)	41 (18.4%)	
Not disturb	46 (48.4%)	102 (79.7%)	148 (66.4%)	

Notes:

*Statistically significant at p less than 0.05

Statistical test: ^a independent t-test; ^b Chi-square test

Most respondents rated their health as intermediate (47.1%). However, half (50.0%) of those who did not utilize the PeKa B40 programme rated their health as good, while the majority of those who did utilize the programme rated their health as intermediate (55.8%).

In assessing health-seeking behaviour, significant differences were found in the experience of persistent pain for three months or more ($p < 0.001$) and whether pain disrupted daily activities ($p < 0.001$) between those

who utilized and those who did not utilize the programme. Among programme users, a higher percentage reported experiencing persistent pain for three months or more compared to non-users (50.5% versus 20.3%, respectively). The majority of both groups indicated that their pain did not interfere with their daily activities. Table III presents a univariate analysis to

Table III: The univariate analysis to determine the determinants of the utilization of the PeKa B40 programme

Variables	Crude OR (95% CI)	Wald stat (df)	P-value
a) Sociodemographic			
Age	1.07 (1.05, 1.10)	30.784 (1)	<0.001*
Gender:			
Male	reference		
Female	0.65 (0.38, 1.10)	2.552 (1)	0.110
Marital Status:			
Married	0.58 (0.26, 1.29)	1.787 (1)	0.181
Divorcee/Unmarried/Widowed	reference		
Ethnic:			
Malay	2.18 (0.22, 21.25)	0.448 (1)	0.503
Non-Malay	reference		
Education Level:			
Tertiary Education	reference	2.154 (2)	0.341
Secondary Education	2.30 (0.74, 7.19)	2.060 (1)	
Primary Education	1.82 (0.62, 5.36)	1.180 (1)	
Occupation:			
Self-business	reference	3.162 (3)	0.367
Agriculture sector	1.80 (0.73, 4.40)	0.198 (1)	
Professional	1.13 (0.48, 2.65)	0.788 (1)	
Housewife	1.08 (0.30, 3.86)	0.906 (1)	
Partner Occupation:			
Housewife	reference	5.768 (4)	0.217
Agriculture sector	1.77 (0.96, 3.29)	3.348 (1)	
Professional	0.42 (0.08, 2.08)	1.131 (1)	
Self-business	1.54 (0.57, 4.20)	0.719 (1)	
Other	1.44 (0.61, 3.42)	0.686 (1)	
b) Health Status			
Presence of Chronic Disease:			
Yes	5.78 (3.19, 10.51)	33.225 (1)	<0.001*
No	reference		
Presence of Chronic Disease Among Family Members:			
Yes	1.34 (0.79, 2.25)	1.181 (1)	0.277
No	reference		
Smoking Status:			
Yes	1.22 (0.60, 2.47)	0.313 (1)	0.576
No	reference		
BMI	0.99 (0.93, 1.05)	0.136 (1)	0.712
Systolic Blood Pressure	1.03 (1.01, 1.05)	4.986 (1)	0.026*
Diastolic Blood Pressure	0.95 (0.92, 0.99)	7.377 (1)	0.007*
Do you feel the need to receive treatment from a healthcare practitioner?			
Yes	1.17 (0.49, 2.84)	0.126 (1)	0.722
No	reference		
Have you used medication without the advice of a healthcare practitioner?			
Yes	1.16 (0.50, 2.71)	0.115 (1)	0.735
No	reference		
Have you received advice from others, aside from healthcare practitioners?			
Yes	0.85 (0.45, 1.60)	0.252 (1)	0.616
No	reference		
Have you received advice from other sources, such as the internet, TV, radio, applications, and others?			
Yes	0.93 (0.55, 1.58)	0.075 (1)	0.785
No	reference		
Have you done something other than the above?			
Yes	0.80 (0.19, 3.44)	0.088 (1)	0.767
No	reference		
Have you experienced persistent pain for 3 months or more?			
Yes	4.01 (2.22, 7.22)	21.315 (1)	<0.001*
No	reference		
Does pain disrupt your activities?			
Highly disturb	12.20 (2.60, 57.25)	16.957 (1)	0.001*
Moderately disturb	4.78 (2.27, 10.06)	10.05 (1)	0.002*
Mildly disturb	2.02 (2.60, 57.25)	2.209 (1)	0.137
Not disturb	Reference	24.875 (3)	0.001

*significant ($p < 0.05$)

determine the factors influencing the utilization of the PeKa B40 programme through simple logistic regression. In the univariate analysis, the study identified significant findings for several variables ($p < 0.05$). The variables that showed strong significance included age ($p < 0.001$), the presence of chronic disease ($p < 0.001$), blood pressure (systolic: $p < 0.026$; diastolic: $p < 0.007$), and methods of medical expense coverage-self-pay ($p = 0.025$) and employer coverage ($p = 0.002$). Additionally, the presence of persistent pain lasting more than three months was significant ($p < 0.001$), as well as mild activity disturbance ($p = 0.001$) and severe activity disturbance ($p = 0.002$). All significant variables listed in Table 3 and those with a $p < 0.25$ were further analysed using multiple logistic regression with the backward likelihood ratio method. The multivariable analysis, which aims to identify the factors influencing the utilization of the PeKa B40 programme while adjusting for confounding variables, is presented in Table IV.

Table IV: The multivariable analysis to determine the determinants of the utilization of the PeKa B40 programme

Variables	Adj. OR (95%CI)	Wald test (df)	P-value
Age	1.06 (1.03, 1.10)	13.880 (1)	0.001*
Presence of Chronic Disease:			
Yes	2.62 (1.28, 5.37)	6.920 (1)	0.009*
No	reference		
Gender			
Female	2.32 (1.15, 4.66)	5.583 (1)	0.018*
Male	reference		
Self-rated health			
Poor	0.05 (0.01, 0.47)	6.688 (1)	0.010*
Intermediate	0.25 (0.06, 0.95)	4.172 (1)	0.041*
Good	0.22 (0.06, 0.82)	5.132 (1)	0.023*
Excellent	reference	7.995 (3)	0.046
Does pain disrupt your activities?			
Highly disturb	14.34 (2.18, 94.26)	7.668 (1)	0.006*
Moderately disturb	3.30 (1.31, 8.33)	6.364 (1)	0.012*
Mildly disturb	1.40 (0.47, 4.19)	0.352 (1)	0.553
Not disturb	reference	11.876 (3)	0.008

Adj. OR: Adjusted Odds Ratio

Hosmer–Lemeshow test: $p = 0.976$; Cox and Snell R^2 : 28.6%; sensitivity was 62.1%, and the specificity was 84.4%.

Overall, 74.9% of the cases are classified correctly. AUROC: 81.9% [95%CI: 76.3, 87.4], $p < 0.01$)

*significant ($p < 0.05$)

Statistical test: Multiple logistic regression

The multivariable analysis included all significant findings from earlier analyses, particularly the influence of gender ($p = 0.018$) and self-rated health ($p = 0.046$). The research indicated that certain factors affected programme usage. Notably, older participants were 1.06 (95% CI: 1.03, 1.10) times higher odds to participate in the programme than younger participants ($p < 0.001$). Individuals with chronic diseases were 2.62 (95% CI: 1.28, 5.37) times higher odds

to participate in the programme than those without chronic diseases ($p < 0.009$). Additionally, females were 2.33 (95% CI: 1.15, 4.66) times higher odds to participate in the programme than males ($p < 0.018$).

Those experiencing high levels of pain ($p = 0.006$) and moderately disturbed of pain ($p = 0.012$) showed significantly higher participating the PeKa B40 programme. The high levels and moderately disturbed of pain were 14.34 (95% CI: 1.31, 8.33) and 3.39 (95% CI: 2.18, 94.26) times higher odds to participate in the programme compared to those without disturbed in pain, respectively. Conversely, individuals who rated their health as good (adjusted OR: 0.22, 95% CI: 0.06, 0.82, $p = 0.023$), intermediate (adjusted OR: 0.25, 95% CI: 0.06, 0.95, $p = 0.041$), or poor (adjusted OR: 0.05, 95% CI: 0.01, 0.47, $p = 0.010$) were less likely to participate in the programme compared to those without chronic diseases.

DISCUSSION

The participation rate of PeKa B40 utilization among residents of Felda Lubuk Merbau exceeds both national and state averages. Approximately 41.8% of the target population actively participated in the PeKa B40 health screening initiative, marking a significant increase compared to the findings from Protect Health Corporation post-2021. Nationally, PeKa B40 utilization is around 14.9%, while Kedah reported 20.67% according to Protect Health Corporation.¹⁰ However, recent data from the Ministry of Health, Malaysia indicates a higher utilization rate in Kedah at 28.42%.¹⁶ The close-knit community of Felda, along with its proximity to health centres, likely contributes to the increased participation in the health screening programme. Additionally, various outreach initiatives by public and private entities targeting rural areas could be influencing the enhanced coverage of the PeKa B40 programme.¹⁷

According to multivariable analysis, increasing age correlates with higher odds of utilizing the PeKa B40 health screening programme. This aligns with previous local research indicating that older adults are more likely to take advantage of available health services compared to younger generations.^{18,19} Furthermore, a study conducted

in neighbouring Singapore found similar results, suggesting that advanced age is a significant predictor of health screening service utilization.²⁰ However, in certain disease screenings, such as ovarian or breast cancer, some researchers have indicated that younger age groups are more interested in participating.^{21,22} Introducing case finding in primary care could facilitate the early identification of non-communicable diseases (NCDs) and their related risk factors, potentially leading to reduce complications and mortality rates. Countries are advised to prioritize addressing modifiable risk factors and early detection of NCDs among the "young old" population (aged 60–75 years) as part of various public health measures.²³ The objective is to lower illness and death rates among older individuals, thereby minimizing the impact of long-term NCDs, improving the quality of life for the elderly, and promoting greater self-reliance.²⁴

The gender of an individual significantly impacts the likelihood of utilizing healthcare screening services. Previous research conducted in Perak and Selangor indicates that Malay females are more inclined to take advantage of the health screening packages available to them compared to males.²⁵ Additional studies show that females tend to visit their primary care facilities and diagnostic services more frequently than males.²⁶ Public hospitals, offering both conventional healthcare and traditional complementary medicine, are often overwhelmed by female patients.²⁷ According to Gómez²⁸, females are more likely than males to utilize preventive and diagnostic treatments, while males tend to rely more on emergency services. Several hypotheses have been proposed to explain this trend. Notably, females generally have a greater need for healthcare due to poorer health conditions compared to their male counterparts. This is reflected in higher illness rates, lower health perceptions, reduced quality of life related to health, and greater levels of disability among females. Furthermore, societal perceptions and constructions of illness differ between males and females, influencing their roles, attitudes, beliefs, and behaviours regarding health concerns. These distinctions lead to varying approaches to seeking healthcare and result in differences in the services provided to males and females.^{29,30}

The presence of chronic diseases increases the likelihood of utilizing health screening services compared to those without chronic conditions. This finding aligns with other studies that have also concluded that individuals with one or more chronic diseases are more inclined to seek comprehensive health screening services.³¹ However, a study conducted in Taiwan indicated that a person's health status did not significantly influence their use of health screening services.³²

Self-rated health refers to an individual's subjective assessment of their well-being, shaped by their perceptions and priorities. Research on self-rated health often examines health-related behaviours such as smoking, dietary habits, physical activity, body mass index (BMI), obesity rates, and alcohol consumption.³³ This study highlights that self-rated health plays a crucial role in determining the utilization of the PeKa B40 health screening programme. Individuals who perceive their health positively are more likely to engage in health screening services. This observation is further supported by another study indicating that individuals who lead healthier lifestyles tend to have more negative views about their health status compared to others.³⁴ Conversely, another study found that individuals with cardiovascular and cerebrovascular diseases, visual impairments, mental disorders, or poor blood test results are more likely to give negative ratings in self-assessed health.³⁵ The differences in findings may be attributed to variations in cultural perceptions and disparities in health literacy based on the location of the research studies.³⁶

Health-seeking behaviour (HSB) strongly influences the respondents to utilize PeKa B40 programme which provides free screening, cancer support, medical device aid and health promotion.¹⁶ Therefore, enhancing awareness, improving access and promoting preventive health behaviours are essential strategies to increase PeKa B40 utilization to reduce health inequalities in Malaysia. A comparable national study using data from the National Health and Morbidity Survey (NHMS) 2019 found that Malaysian adults who rated their health poorly or who had long-term conditions were actually more likely to seek treatment—indicating a reactive HSB pattern (i.e., seeking

care only when ill) rather than preventive screening behaviour.³⁷

Additionally, the presence of chronic pain that interferes with daily activities also influences the utilization of health screening services. This conclusion is supported by numerous publications from other researchers.^{38,39} Chronic pain has been shown to lead to increase healthcare usage, with higher levels of pain intensity and impairment correlated with a greater likelihood of seeking medical attention. Patients with chronic pain often view healthcare utilization as a method of coping with their symptoms.⁴⁰ This group may seek health screenings with the expectation of understanding the causes of their ongoing discomfort, rather than recognizing that these tests are intended to detect diseases at an early, asymptomatic stage. Moreover, individuals may use health screening appointments as an opportunity to consult with healthcare practitioners about their current health status.⁴¹

LIMITATIONS

This study encountered several limitations during its execution. As a cross-sectional observational study, it cannot establish causal relationships, as its design does not allow for the assessment of temporality according to Bradford Hill's criteria. The study was conducted exclusively within a specific neighbourhood, resulting in a limited scope due to the unique characteristics of that locality. As a result, the generalizability of our findings to other local populations in Malaysia remains uncertain and requires further investigation.

CONCLUSION

Overall, the prevalence of PeKa B40 utilization among residents of Felda Lubuk Merbau is higher than the national and state averages. This indicates a significant increase in participation in health screenings compared to previous studies. The compact structure of Felda Lubuk Merbau and its proximity to healthcare facilities may contribute to the higher levels of participation. Furthermore, outreach initiatives specifically targeting rural areas might be enhancing the coverage of the PeKa B40 programme. To improve the programme's reach, the

government should actively promote it, particularly to adult men. It is also essential to extend the programme's benefits to healthy individuals, not just those who are sick and require medical treatment. Although this study has certain limitations, such as its cross-sectional design, the findings provide valuable insights for future research and public health initiatives.

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INSTITUTIONAL REVIEW BOARD (ETHICS COMMITTEE)

Ethical approval was obtained from both the Medical Research and Ethics Committee (MREC) (NMRR-20-30882-57796 (IIR)) and the Research Ethics Committee at Universiti Teknologi MARA (UiTM) (REC/08/2022 (PG/MR/176)).

CONFLICT OF INTEREST

All authors declare that there are no conflicts of interest.

REFERENCES

1. UNDP M. SDG - Goal 1_ No poverty. Accessed 16 January, 2022. <https://www.my.undp.org/content/malaysia/en/home/sustainable-development-goals/goal-1-no-poverty.html>
2. Abdul Hakim R, Abdul Malik NA, Ismail R. Does Social Capital Reduce Poverty? A Case Study of Rural Households in Terengganu, Malaysia. *European Journal of Social Sciences*. 2010;14(4):556-566.
3. Ministry of Health Malaysia. The Impact of Noncommunicable Diseases and Their Risk Factors on Malaysia's Gross Domestic Product 2020. [Http://www.moh.gov.my](http://www.moh.gov.my)
4. Institute for Public Health, Ministry of Health Malaysia. Non Communicable Disease - Risk Factors and other Health Problem - NHMS 2019. Accessed 27 October 2023, 2023. <https://iku.moh.gov.my/nhms-2019>
5. Economic Planning Unit. Twelfth Malaysia Plan, 2021-2025 (Twelfth Plan),. Accessed Jan 25, 2023. <https://www.epu.gov.my>
6. ProtectHealth. Peka B40. Accessed 16 January, 2022. <https://protecthealth.com.my/>
7. The Edge Market. 'Worrying' data shows about 33% of B40 group detected with non-communicable disease via PeKA B40 health screening - Ministry of Health. The Edge Market; 2021. Accessed 16th July 2021. <https://www.theedgemarkets.com/>
8. BERNAMA. Age limit for PeKa B40 lowered to 40 - Health Ministry. 2019. <https://www.nst.com.my/>
9. Syed Ahmad Yunus SZ, Wan Puteh SE, Ali A, Daud F. The Covid Impact to Public Healthcare Utilization Among Urban Low-Income Subsidized Community in Klang Valley Malaysia. *Health Services Research and Managerial Epidemiology*. 03/01 2021;8(2) doi:10.1177/23333928211002407
10. ProtectHealth. PeKaB40 Report 2021. Accessed 27 October 2023, 2023. https://protecthealth.com.my/wp-content/uploads/2022/04/PeKaB40-Report2021_280422.pdf
11. ProtectHealth. Peka B40 - Manual for MOH Hospital. Accessed 27 Oct 2023, 2023. <https://hqe2.moh.gov.my/v2/pusat-media/muat-turun/category/22-peka-b40.html?download=90:manual-for-moh-hospital>
12. Institute for Public Health, Ministry of Health Malaysia. NHMS2019 - Healthcare Demand. Accessed 27 October 2023, 2023. <https://iku.moh.gov.my/nhms-2019>
13. Control Disease Center. Measuring Your Blood Pressure. 2025;
14. Mayo Clinic. What's a normal resting heart rate? 2025. <https://www.mayoclinic.org/healthy-lifestyle/fitness/expert-answers/heart-rate/faq-20057979>
15. NHS Inform. Body mass index (BMI). 2025. <https://www.nhsinform.scot/healthy-living/food-and->

nutrition/healthy-eating-and-weight-management/
body-mass-index-bmi/

16. Ministry of Health Malaysia. PeKa B40 coverage. Accessed 8 Dec 2023, <https://data.moh.gov.my/dashboard/peka-b40>
17. Kedah State Health Department. Technical Report Kedah State Health Department 2023. 2023. http://jknkedah.moh.gov.my/LAPORAN_TEKNIKAL_JKN_KEDAH_2023
18. Cheah YK, Goh K-L. Determinants of the demand for health screening in Malaysia: The case of the aged population. *The Social Science Journal*. 04/01 2017;54doi:10.1016/j.soscij.2017.03.003
19. Krishnaswamy S, Subramaniam K, Low WY, et al. Factors Contributing to Utilization of Health Care Services in Malaysia: A Population-Based Study. *Asia Pacific Journal of Public Health*. 2009;21(4):442-450.
20. Asha Rani PV, Devi F, Wang P, et al. Factors influencing uptake of diabetes health screening: a mixed methods study in Asian population. *BMC Public Health*. 2022/08/09 2022;22(1):1511. doi:10.1186/s12889-022-13914-2
21. Stark D, Nankivell M, Pujade-Lauraine E, et al. Standard chemotherapy with or without bevacizumab in advanced ovarian cancer: quality-of-life outcomes from the International Collaboration on Ovarian Neoplasms (ICON7) phase 3 randomised trial. *J The lancet oncology*. 2013;14(3):236-243.
22. Lairson DR, Chan W, Newmark GR, medicine. Determinants of the demand for breast cancer screening among women veterans in the United States. *J Social science*. 2005;61(7):1608-1617.
23. Yates LB, Djoussé L, Kurth T, Buring JE, Gaziano JMJAoIM. Exceptional longevity in men: modifiable factors associated with survival and function to age 90 years. 2008;168(3):284-290.
24. Shazlina SG. Health Screening for Older People What are the current recommendations? *Malays Fam Physician*. 2015;10(1):2-10.
25. Mohd Izmail NA, Wan Puteh SE, Shamsuddin K, Kamaruzaman H, F. N. Gender Preferences, Socio-Demographic and Health Risks Associated with Preferred Preventive-Promotive Benefit Packages of Health Insurance for Women in Perak and Selangor, Malaysia. *Sains Malaysiana*. 2020;49(8):1969-1980. doi:<http://dx.doi.org/10.17576/jsm-2020-4908-19>
26. Bertakis KD, Azari R, Helms LJ, Callahan EJ, Robbins JA. Gender differences in the utilization of health care services. *J Fam Pract*. Feb 2000;49(2):147-52.
27. Kaur J, Hamajima N, Yamamoto E, et al. Patient satisfaction on the utilization of traditional and complementary medicine services at public hospitals in Malaysia. *Complementary Therapies in Medicine*. 2019/02/01/ 2019;42:422-428. doi:<https://doi.org/10.1016/j.ctim.2018.12.013>
28. Gómez Gómez E. Género, equidad y acceso a los servicios de salud: una aproximación empírica. *J Revista Panamericana de Salud Publica*. 2002;11(2):327-334.
29. Verbrugge LM. Gender and health: an update on hypotheses and evidence. *J Journal of health social behavior*. 1985;1(1):156-182.
30. Macintyre S, Hunt K, Sweeting H. Gender differences in health: are things really as simple as they seem? *J Social science medicine and science in sports and exercise*. 1996;42(4):617-624.
31. Chien SY, Chuang MC, Chen IP, Yu PH. Primary Drivers of Willingness to Continue to Participate in Community-Based Health Screening for Chronic Diseases. *Int J Environ Res Public Health*. May 11 2019;16(9)doi:10.3390/ijerph16091645
32. Chien S-Y, Chuang M-C, Chen IP. Why People Do Not Attend Health Screenings: Factors That Influence Willingness to Participate in Health Screenings for Chronic Diseases. *International journal of environmental research and public health*. 2020;17(10):3495. doi:10.3390/ijerph17103495
33. Delpierre C, Lauwers-Cances V, Datta GD, Berkman L, Lang T. Impact of social position on the effect of cardiovascular risk factors on self-rated health. *J American journal of public health*. 2009;99(7):1278-1284.
34. Laves A, Asada Y, Kephart G. Whiners and deniers—What does self-rated health measure? *J Social science medicine*. 2012;75(1):1-9.

35. Wu S, Wang R, Zhao Y, et al. The relationship between self-rated health and objective health status: a population-based study. *BMC Public Health*. 2013/04/09 2013;13(1):320. doi:10.1186/1471-2458-13-320
36. Bombak AE. Self-rated health and public health: a critical perspective. *Front Public Health*. 2013;1:15. doi:10.3389/fpubh.2013.00015
37. Mohd Noh SN, Jawahir S, Tan YR, Ab Rahim I, Tan EH. The Health-Seeking Behavior among Malaysian Adults in Urban and Rural Areas Who Reported Sickness: Findings from the National Health and Morbidity Survey (NHMS) 2019. *Int J Environ Res Public Health*. 2022;19(6):3193.
38. Thorstensson CA, Gooberman-Hill R, Adamson J, Williams S, Dieppe P. Help-seeking behaviour among people living with chronic hip or knee pain in the community. *J BMC musculoskeletal disorders*. 2009;10(3):1-10.
39. Cornally N, McCarthy G. Help-seeking behaviour for the treatment of chronic pain. *J British journal of community nursing*. 2011;16(2):90-98.
40. Michaëlis C, Kristiansen M, Norredam M. Quality of life and coping strategies among immigrant women living with pain in Denmark: a qualitative study. *J BMJ open*. 2015;5(7):e008075.
41. Wee LE, Cher WQ, Sin D, Li ZC, Koh GC-H. Primary care characteristics and their association with health screening in a low-socioeconomic status public rental-flat population in Singapore- a mixed methods study. *BMC Family Practice*. 2016/02/06 2016;17(1):16. doi:10.1186/s12875-016-0411-5