


BMJ Open Understanding the acceptance of medical marijuana among Malaysian adults: a cross-sectional online survey

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ABSTRACT

Background Global discussions surrounding the medical use of marijuana have gained momentum; yet in Malaysia, cannabis remains strictly prohibited under the Dangerous Drugs Act 1952. Despite its legal status, there is growing public discourse on its potential therapeutic benefits. Understanding public acceptance is critical for informing future health policies and public education efforts.

Methods This study used a cross-sectional design, web-based survey among Malaysians aged 18 years and above using convenience and snowball sampling methods. The survey collected data on sociodemographic characteristics, lifestyle factors (eg, smoking and drug use), awareness of medical marijuana and perceived risk. Multivariable logistic regression analysis was performed to identify factors associated with acceptance of medical marijuana decriminalisation.

Results Out of 2047 respondents, 88.4% supported medical marijuana decriminalisation based on clinical evidence. Key predictors of acceptance included male gender (adjusted OR (AOR) 1.71; 95% CI 1.29 to 2.26), higher education (Bachelor's degree AOR 1.56; 95% CI 1.09 to 2.23 and Master's/PhD AOR 2.04; 95% CI 1.34 to 3.10), self-employment (AOR 1.84; 95% CI 1.22 to 2.77) and private sector employment (AOR 1.40; 95% CI 1.03 to 1.89). Behavioural factors, such as smoking (AOR 1.58; 95% CI 1.10 to 2.27), prior drug use (AOR 1.86; 95% CI 1.30 to 2.67) and low perceived risk (AOR 5.82; 95% CI 3.48 to 9.73), were also significantly associated with acceptance.

Conclusions A large proportion of Malaysian adults supported the clinical use of medical marijuana. Acceptance was strongly associated with demographic and behavioural factors, particularly gender, education and perceived risk. These findings may guide the development of targeted public health education and inform future discussions on regulatory approaches in Malaysia.

BACKGROUND

The global acceptance of medical marijuana remains uneven, influenced by legal restrictions, sociocultural values and public health priorities.¹ While international interest in its therapeutic applications continues to grow, marijuana remains controversial, especially in

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first national Malaysian study assessing the public acceptance of medical marijuana using a bilingual, self-administered online survey suitable for diverse ethnic and educational groups.
- ⇒ A large sample with broad geographic reach was achieved through digital dissemination via government channels and widely used social media platforms.
- ⇒ The questionnaire was adapted from a validated instrument and refined through expert review and pretesting, ensuring clarity and content validity.
- ⇒ Convenience-based online sampling may introduce selection bias and limit generalisability, particularly among individuals with limited internet access or lower digital literacy.
- ⇒ The questionnaire was adapted from a validated instrument and refined through expert review and pretesting, ensuring clarity and content validity.

settings with restrictive drug policies or religious sensitivities.² Many nations have revised their legal classifications of cannabis, shifting it from strictly controlled substances to those permitted for regulated medical use.^{3,4}

In Malaysia, marijuana remains a prohibited substance under the Dangerous Drugs Act 1952, which criminalises its possession, distribution and use.⁵ However, public discussions on the potential medical benefits of cannabis have become more prominent in recent years, in parallel with global trends.⁶ This growing discourse emerges amid Malaysia's complex sociocultural landscape, where religion, education level and patterns of urbanisation intersect to influence public views on sensitive health-related matters.⁵⁻⁷

Malaysia is a multiethnic, upper middle-income country with a dual public-private healthcare system. While urban centres, such as Kuala Lumpur, have higher health literacy and specialist access, rural and



remote regions, especially in East Malaysia, continue to experience health service disparities. These disparities, along with religious conservatism and centralised drug control laws, shape the national discourse on cannabis regulation.^{6,7} Malaysia's socioeconomic context is heterogeneous, with urban–rural disparities and wide variations in health literacy.⁷ The country's digital infrastructure is well developed where over 95% of Malaysian adults have internet access, according to the Department of Statistics Malaysia (DOSM), facilitating rapid information dissemination and growing public engagement in health-related issues.⁸

Internationally, more than 50 countries have legalised or authorised medical marijuana use under varying degrees of restriction.⁹ Acceptance tends to be higher in countries with liberal drug policies, such as Canada, South Africa and several US states.^{4,9} While several Asian nations have begun to relax cannabis regulations for medical purposes, Malaysia has retained its strict cannabis laws, citing the need for stronger scientific evidence before legal reconsideration.⁷ To date, no cannabis-based products have been authorised for medical use in Malaysia.^{7,10} Scientific findings on medical marijuana remain mixed. While therapeutic benefits are recognised for conditions, such as chronic pain, epilepsy, sleep disorders and diabetes, cannabis use is also associated with adverse health outcomes.^{11–15} These include respiratory complications (especially from inhaled forms), cardiovascular events, psychiatric disorders, cognitive impairment and concerns regarding dependency.^{16,17} Although excessive marijuana use has been linked to increased risks of lung cancer and other malignancies, including melanoma, urogenital, breast, colorectal and head and neck cancers, existing evidence remains inconclusive and often limited by methodological variability.^{18,19}

At the same time, innovations in cannabis formulations have shown promising results. For example, sublingual sprays combining cannabidiol and delta-9-tetrahydrocannabinol have demonstrated benefits in glycaemic control and lipid profiles in patients with type II diabetes, with minimal side effects.²⁰ Recent studies report that cannabis is increasingly used among patients with cancer to improve quality of life and reduce reliance on conventional medications, manage pain, nausea, anxiety and other symptoms.^{17,21,22}

Individual attitudes towards medical marijuana are often shaped by sociocultural background, personal experiences and behavioural patterns. Those with a history of substance use, including marijuana, alcohol or tobacco, are generally more supportive of medical cannabis, likely due to greater familiarity and more permissive perspectives.^{22–25} In contrast, individuals with no substance use history, particularly those from conservative sociocultural backgrounds, may maintain low levels of acceptance, often influenced by stigma and restrictive legal frameworks.²⁶

Malaysia, like several of its Southeast Asian neighbours, such as Singapore and Indonesia, enforces strict drug laws that include severe penalties for cannabis-related

offences.^{5,27} The Dangerous Drugs Act 1952 prescribes harsh legal consequences, including capital punishment, for certain infractions.⁵ These legal conditions, combined with prevailing religious and cultural values, create a social environment that discourages cannabis use, even for medical reasons. Despite these challenges, there is growing interest in exploring cannabis for therapeutic purposes in Malaysia. As global evidence accumulates and societal attitudes evolve, understanding public perceptions and acceptance of medical marijuana becomes essential for shaping future policies and public health strategies. Lifestyle behaviours, such as prior drug use, alcohol consumption and smoking, have consistently been associated with more favourable attitudes towards cannabis.^{28–30} Prior personal experience with marijuana may foster openness to its medical applications, while those without such experience may rely heavily on dominant legal or religious narratives.^{28–30}

In this context, the present study aimed to examine the level of acceptance of medical marijuana among adults in Malaysia and identify associated sociodemographic and behavioural predictors. We hypothesised that individuals with prior marijuana exposure and lower perceived risk would demonstrate greater acceptance of medical marijuana in Malaysia. These insights may inform future public health strategies, regulatory considerations and culturally sensitive education initiatives.

METHODS

Study design and sampling

This cross-sectional study was conducted between February and April 2023 to assess the prevalence and key factors associated with public acceptance of medical marijuana in Malaysia. An online survey was distributed to Malaysian adults to examine associations among socio-demographic characteristics, lifestyle behaviours and perceived risk with attitudes towards medical marijuana. The findings aim to provide evidence to inform the integration of medical marijuana into the healthcare system and to support strategies for improving public health outcomes.

This study targeted Malaysian adults aged 18 years and above, regardless of marijuana user status. A 'user' was defined as an individual who had used marijuana within the last 12 months.¹⁸ The inclusion criteria were: (1) aged 18 years or older; (2) access to the internet and (3) proficiency in either Malay or English. Malay and English were selected as they are the two most widely used languages in Malaysia, especially in education and digital communication. Using these languages ensured broad accessibility and minimised potential issues with translation or misinterpretation. Individuals who were unwilling to provide informed consent or who lacked internet access were excluded.

An eligibility screening item ('Are you 18 years or older?') was included at the start of the survey. Participants who

responded 'No' were automatically screened out and prevented from proceeding to subsequent sections.

Sample size determination

The required sample size was calculated using the standard formula for prevalence studies.^{31 32} An initial estimate based on the national prevalence of current drug use in Malaysia (0.5%)³¹ yielded a minimum of 73 respondents, which was deemed insufficient for robust statistical analysis. Therefore, a more conservative approach was adopted using the maximum-variance method (50% prevalence), which is recommended when dealing with low-prevalence phenomena. This approach yielded a base sample size of 383 participants, based on a 5% margin of error and a 95% confidence level. An additional 30% was added to account for potential non-response, resulting in a final target sample size of 548 participants. However, a total of 2047 respondents were successfully recruited after 1 month of data collection, exceeding the minimum requirement.

Sampling procedure

A non-probability, voluntary response sampling strategy was employed. The survey was administered online via Google Forms and distributed through various digital platforms, including official government email lists, social media channels, such as Facebook and WhatsApp, and online community networks. Participants were encouraged to share the survey link within their personal networks (snowball sampling), facilitating a chain-referral dissemination strategy. This approach allowed the survey to reach a wide range of demographic groups across geographic regions, ethnicities and socioeconomic backgrounds in Malaysia. Additionally, this method facilitated the recruitment of participants through recommendations from previous participants, helping to prevent enrolling multiple participants and individuals unwilling to participate because of the sensitive nature of drug use. This strategy was appropriate, given the online nature of the survey and the need to reach a wide and diverse population across Malaysia in a cost-effective and time-efficient manner.

Recruitment and response rate

Due to the digital nature of the recruitment strategy, the survey achieved a broader outreach than initially anticipated, successfully engaging participants from diverse demographic and geographic backgrounds across Malaysia. Within 1 month of data collection, a total of 2047 valid responses were received, surpassing the targeted sample size. The accessibility of the online format and the voluntary nature of participation encouraged consistent engagement, and all individuals who initiated the survey completed it in full, resulting in a 100% completion rate.

Minimising bias and ensuring data quality

Our use of an online survey introduced the possibility of sampling bias, given Malaysia's high but not universal internet coverage. However, according to the

DOSM (2024), 95% of adults are digitally connected, supporting the representativeness of the sample. Several strategies were implemented to minimise non-response bias, including describing the study as 'medical substance research' and ensuring demographic representativeness by comparing respondent characteristics with national statistics on Malaysia's digitally connected population (table 1). To assess the consistency of the findings, responses from the first 500 participants were compared with those from the remainder of the sample. No significant differences were observed in key demographic characteristics or outcome measures ($p>0.05$), supporting the reliability of the data.

Patient and public involvement

Patients and members of the public were not involved in the design, conduct, reporting or dissemination of this research. However, the study findings will be disseminated to relevant community stakeholders, healthcare professionals and policy groups through seminars and policy briefs to support evidence-informed awareness and decision-making.

Data collection and study instrument

Data were collected using an online self-administered questionnaire developed via Google Forms, available in Malay and English. The survey link, accompanied by an information page and informed consent form, was disseminated through various digital platforms, including official government email lists, WhatsApp, Facebook and online community networks. Respondents who provided informed consent were automatically directed to the survey, while those who declined were exited from the form. Participation was voluntary, anonymous and no identifiable data were collected. Data will be stored for 7 years and destroyed after the completion of the study. Participants may request to know the results of the study. All data will be securely stored and only accessible to authorised personnel.

The questionnaire was adapted from a previously validated instrument by Dapari *et al*³³ and consisted of 6 sections comprising 42 items.³³ These sections covered demographic characteristics, socioeconomic status, lifestyle behaviours (smoking, alcohol use, drug use and social media use), risk assessment of medical marijuana, perceived risk and acceptance of medical marijuana decriminalisation. The construct of 'acceptance' was operationalised as agreement with the decriminalisation of medical marijuana, provided that there was clinical evidence supporting its use. Perceived risk was measured using a five-point Likert scale (1=strongly disagree and 5=strongly agree), adapted from the same instrument.

Perceived risk was defined as 'the individual's perceived likelihood of harmful health or social consequences resulting from medical marijuana use'. The bilingual (Malay and English) questionnaire was designed to ensure comprehension across Malaysia's multiethnic population. Content validity was confirmed by public health and

**Table 1** Baseline characteristics, sociodemographic factors, lifestyle factors and perceptions towards the acceptance of medical marijuana decriminalisation

Variable	Acceptance status			P value
	Total n (%)	Low n (%)	High n (%)	
Citizenship*				
Malaysian	2045 (99.9)	788 (38.5)	1257 (61.5)	0.526†
Non-Malaysian	2 (0.1)	0 (0)	2 (100)	
Locality‡				
Urban	584 (72.3)	169 (28.9)	415 (71.1)	0.264
Rural	224 (27.7)	56 (25)	168 (75)	
Age				
≤ 24 years	112 (5.5)	31 (27.7)	81 (72.3)	0.053
25–54	1867 (91.2)	730 (39.1)	1137 (60.9)	
≥55 years	68 (3.3)	27 (39.7)	41 (60.3)	
Gender				
Male	1391 (68)	377 (27.1)	1014 (72.9)	< 0.001
Female	656 (32)	411 (62.7)	245 (37.3)	
Ethnicity				
Malay	1666 (81.4)	634 (38.1)	1032 (61.9)	0.029
Chinese	117 (5.7)	57 (48.7)	60 (51.3)	
Indian	113 (5.5)	38 (33.6)	75 (66.4)	
Bumiputera Sabah	91 (4.4)	42 (46.2)	49 (53.8)	
Bumiputera Sarawak	45 (2.2)	11 (24.4)	34 (75.6)	
Other	15 (0.7)	6 (40)	9 (60)	
Religion				
Islam	1776 (86.8)	673 (37.9)	1103 (62.1)	
Buddha	73 (3.6)	36 (49.3)	37 (50.7)	
Hindu	84 (4.1)	31 (36.9)	53 (63.1)	
Christian	92 (4.5)	37 (40.2)	55 (59.8)	
Other	22 (1.1)	11 (50)	11 (50)	
Education level				
No formal/primary/secondary	437 (21.3)	122 (27.9)	315 (72.1)	< 0.001
STPM/matriculation/diploma	622 (30.4)	213 (34.2)	409 (65.8)	
First degree	650 (31.8)	297 (45.7)	353 (54.3)	
Master's/PhD	338 (16.5)	156 (46.2)	182 (53.8)	
Occupation				
Government	1016 (49.6)	553 (54.4)	463 (45.6)	
Private	524 (25.6)	124 (23.7)	400 (76.3)	
Self-employed	360 (17.6)	60 (16.7)	300 (83.3)	
Student/unemployed/retiree	145 (7.1)	49 (33.8)	96 (66.2)	
Others	2 (0.1)	2 (100)	0 (0)	
Income level				
< RM4000	611 (29.8)	173 (28.3)	438 (71.7)	< 0.001
RM4000–RM9999	809 (39.5)	318 (39.3)	491 (60.7)	
≥RM10000	569 (27.8)	274 (48.2)	295 (51.8)	
Not mentioned	58 (2.8)	23 (39.7)	35 (60.3)	

Continued

Table 1 Continued

Variable	Acceptance status			P value
	Total n (%)	Low n (%)	High n (%)	
Ever heard of medical marijuana				
Yes	1952 (95.4)	720 (36.9)	1232 (63.1)	< 0.001
No	95 (4.6)	68 (71.6)	27 (28.4)	
Smoking				
Current	697 (34)	145 (20.8)	552 (79.2)	< 0.001
Ever	390 (19.1)	92 (23.6)	298 (76.4)	
Never	960 (46.9)	551 (57.4)	409 (42.6)	
Alcohol intake				
Current	141 (6.9)	46 (32.6)	95 (67.4)	< 0.001
Ever	401 (19.6)	88 (21.9)	313 (78.1)	
Never	1505 (73.5)	654 (43.5)	851 (56.5)	
Taken drugs				
Yes	789 (38.5)	133 (16.9)	656 (83.1)	< 0.001
No	1258 (61.5)	655 (52.1)	603 (47.9)	
Exposed to medical marijuana content				
Yes	1693 (82.7)	567 (33.5)	1126 (66.5)	< 0.001
No	353 (17.3)	221 (62.6)	132 (37.4)	
Perceived risk				
Low	1895 (92.6)	656 (34.6)	1239 (65.4)	< 0.001
High	152 (7.4)	132 (86.8)	20 (13.2)	
Perceived risk approved				
Low	1331 (65)	708 (53.2)	623 (46.8)	< 0.001
High	716 (35)	80 (11.2)	636 (88.8)	

P value refers to χ^2 statistics.
 *Did not proceed for further analysis owing to small representativeness.
 † Fisher's exact test.
 ‡Total sample is less due to incompleteness.
 STPM, Sijil Tinggi Persekolahan Malaysia.

social science experts. Internal consistency reliability was acceptable (Cronbach's $\alpha=0.78$).

The instrument underwent pretesting in October 2022 among a diverse group of staff from the Ministry of Health Malaysia and their families to assess clarity, readability and comprehension. Based on the pretest feedback, minor revisions were made to improve wording, simplify language and enhance instructions. The final questionnaire used in this study is provided as online supplemental file 1. Behavioural variables, such as smoking, drug use and alcohol consumption, were based on self-reported responses. Specifically, smoking referred to the use of cigarettes or tobacco products, drug use referred to illicit or non-medically prescribed substances and alcohol use referred to the consumption of alcoholic beverages. 'Current use' for each behaviour was defined as use within the past 12 months.

Data analysis

Descriptive statistics were used to summarise participants' sociodemographic characteristics, behavioural factors and perceptions towards medical marijuana. To identify potential factors associated with acceptance of medical marijuana, univariate logistic regression analyses were first conducted for all independent variables, including age, gender, ethnicity, income, education level, occupation, substance use history (smoking, alcohol and drug use), awareness of medical marijuana and perceived risk. Perceived risk was measured using a five-point Likert scale. As no standardised or previously established cut-off point was available from prior studies, expert consensus within the research team was used to determine the most appropriate categorisation for this dataset. Accordingly, the median value (cut-off point=3) was selected to dichotomise responses into 'low' and 'high' risk perception



groups, ensuring balanced classification and meaningful comparison between categories.

Variables with a p value < 0.25 in the univariate analyses were subsequently included in the multivariable logistic regression model using the enter method to control for potential confounding. Model diagnostics were conducted to ensure validity: goodness-of-fit was assessed using the classification table and the Hosmer and Lemeshow test; multicollinearity was evaluated using variance inflation factors (VIFs), with values < 5 considered acceptable; and potential interaction effects were examined. Results from the final model were expressed as adjusted ORs (AORs) with corresponding 95% CIs and statistical significance was set at $p < 0.05$. All analyses were performed using IBM SPSS Statistics for Windows, V.28.0 (Armonk, NY: IBM Corp.). Data visualisation (charts) was created in Microsoft Excel, while tables and descriptive summaries were compiled using Microsoft Word.

RESULTS

This study included 2047 respondents. Most participants were Malaysian, $n=2045$ (99.9%), and resided in urban areas, $n=584$ (72.3%). Additionally, the respondents were predominantly males, $n=1391$ (68.0%), Malays, $n=1666$ (81.4%) and Muslims, $n=1776$ (86.8%). Regarding educational qualification, $n=650$ (31.8%) earned a first degree, while 622 respondents or 30.4% matriculated or received a diploma. Based on the occupation, government employees formed the largest group, $n=1016$ (49.6%). Approximately 39.5% of the respondents or 809 were middle-income earners (RM4000–RM9999; [table 1](#)).

Furthermore, 88.4% supported the decriminalisation of medical marijuana based on the clinical research evidence. Baseline analysis revealed that several factors were significantly associated with the acceptance of medical marijuana. Based on sex, males exhibited a significantly higher acceptance rate of medical marijuana ($n=1014$ (72.9%)) than females ($n=245$ (37.3%)), indicating a strong predictor of acceptance rate. Based on the educational status, respondents with lower education levels, particularly those with primary or secondary education, exhibited higher acceptance rates ($n=315$ (72.1%)) than those with higher education levels. Based on the occupational status, self-employed individuals ($n=300$ (83.3%)) and private sector employees ($n=400$ (76.3%)) exhibited significantly higher acceptance rates than government employees ($n=463$ (45.6%)). Based on the level of income, lower income earners ($< RM4000$) exhibited a higher acceptance rate ($n=438$ (71.7%)) than higher income earners ($\geq RM10\ 000$; 51.8%; [table 2](#)).

Based on the awareness and lifestyle factors, respondents who were aware of medical marijuana were more inclined to accept it ($n=1232$ (63.1%)). Based on the behavioural lifestyle factors, current smokers ($n=552$ (79.2%)) and those with a history of drug use ($n=656$ (83.1%)) exhibited higher acceptance rates of medical marijuana than individuals who never smoked or used

drugs. Based on the perceived risk, respondents with low perceived risk were significantly more inclined to accept medical marijuana ($n=1239$ (65.4%)) than those with high perceived risk ($n=20$ (13.2%)) as in [table 2](#).

Multivariable logistic regression analysis revealed key predictors of acceptance of medical marijuana decriminalisation. Based on the gender, males exhibited a significantly high probability of accepting medical marijuana decriminalisation (AOR 1.71; 95% CI 1.29 to 2.26). Based on the educational level, respondents with a higher education level, a bachelor's degree (AOR 1.56, 95% CI 1.09 to 2.23) and those with a Master's or PhD (AOR 2.04, 95% CI 1.34 to 3.10) exhibited a significantly high probability of accepting medical marijuana decriminalisation. Based on the employment status, self-employed individuals (AOR 1.84, 95% CI 1.22 to 2.77) and private sector employees (AOR 1.40, 95% CI 1.03 to 1.89) exhibited a significantly higher probability of accepting medical marijuana decriminalisation than government employees.

Based on the behavioural lifestyle factors, smokers (AOR 1.58, 95% CI 1.10 to 2.27) and those with a history of drug use (AOR 1.86, 95% CI 1.30 to 2.67) were significantly more inclined to accept medical marijuana decriminalisation. Based on the perceived risk, respondents with low perceived risk were significantly inclined to accept medical marijuana decriminalisation (AOR 5.82, 95% CI 3.48 to 9.73) compared with those with high perceived risk. Conversely, respondents with low perceived risk approval were significantly less inclined to accept medical marijuana decriminalisation (AOR 0.22, 95% CI 0.15 to 0.33) than those with high perceived risk approval. The results were derived from a hierarchical multivariable logistic regression model with adjustment for sociodemographic, behavioural and perception-related factors.

DISCUSSION

This study offers the first nationwide insight into public acceptance of medical marijuana in Malaysia, revealing insights into evolving attitudes within a historically conservative context. The findings indicate a broad receptivity among Malaysians, with more than 80% expressing support for decriminalising medical marijuana. This level of endorsement is notable, given the strict legal environment surrounding cannabis use in Malaysia. The analysis showed that the acceptance of medical marijuana is influenced by a combination of demographic, behavioural and personal perception factors, all of which have important implications for health communication and policymaking.

Gender differences were prominent, with male respondents showing a greater likelihood of supporting medical marijuana. This aligns with previous studies that consistently find higher acceptance of drug-related policy reform among men.^{13 34} Education level, while initially showing contradictory results in descriptive statistics, emerged as a positive predictor in multivariable analysis. Respondents with tertiary education were significantly

Table 2 Logistic regression analysis of factors associated with the acceptance of medical marijuana decriminalisation

Variable	Univariate		Multivariable	
	COR (95% CI)	P value	AOR (95% CI)	P value
Locality				
Rural	1			
Urban	1.22 (0.86 to 1.74)	0.264		
Age group				
≤ 24 years	1		1	
25–54	0.60 (0.39 to 0.91)	0.017	1.16 (0.68 to 1.97)	0.583
≥55 years	0.58 (0.31 to 1.10)	0.096	0.92 (0.43 to 1.99)	0.838
Gender				
Female	1		1	
Male	4.51 (3.70 to 5.50)	< 0.001	1.71 (1.29 to 2.26)	< 0.001
Ethnicity				
Malay	1		1	
Chinese	0.65 (0.44 to 0.94)	0.023	0.86 (0.53 to 1.42)	0.564
Indian	1.21 (0.81 to 1.81)	0.348	1.65 (0.99 to 2.76)	0.056
Bumiputera Sabah	0.72 (0.47 to 1.10)	0.124	0.81 (0.48 to 1.36)	0.426
Bumiputera Sarawak	1.90 (0.96 to 3.77)	0.067	1.21 (0.55 to 2.68)	0.637
Other	0.92 (0.33 to 2.60)	0.877	0.76 (0.17 to 3.34)	0.717
Religion				
Islam	1			
Buddha	0.63 (0.39 to 1.00)	0.051		
Hindu	1.04 (0.66 to 1.64)	0.855		
Christian	0.91 (0.59 to 1.39)	0.655		
Other	0.61 (0.26 to 1.42)	0.250		
Education level				
No formal/primary/secondary	1		1	
STPM/matriculation/diploma	0.74 (0.57 to 0.97)	0.030	1.25 (0.91 to 1.74)	0.173
First degree	0.46 (0.36 to 0.60)	< 0.001	1.56 (1.09 to 2.24)	0.016
Master's/PhD	0.45 (0.34 to 0.61)	< 0.001	2.04 (1.33 to 3.12)	0.001
Occupation				
Government	1		1	
Private	3.85 (3.04 to 4.88)	< 0.001	1.40 (1.02 to 1.92)	0.035
Self-employed	5.97 (4.41 to 8.09)	< 0.001	1.84 (1.25 to 2.70)	0.002
Student/unemployed/retiree	2.34 (1.62 to 3.37)	< 0.001	1.61 (0.97 to 2.65)	0.066
Others	–		–	
Income level				
< RM4000	1		1	
RM4000–RM9999	0.61 (0.49 to 0.76)	< 0.001	0.85 (0.64 to 1.13)	0.252
≥RM10 000	0.43 (0.33 to 0.54)	< 0.001	0.72 (0.52 to 1.02)	0.062
Not mentioned	0.60 (0.35 to 1.05)	0.072	0.72 (0.37 to 1.43)	0.349
Ever heard of medical marijuana				
No	1		1	
Yes	4.31 (2.73 to 6.79)	< 0.001	1.61 (0.95 to 2.73)	0.075
Smoking				
Never smoker	1		1	

Continued



Table 2 Continued

Variable	Univariate		Multivariable	
	COR (95% CI)	P value	AOR (95% CI)	P value
Ever smoker	4.36 (3.34 to 5.70)	< 0.001	1.58 (1.10 to 2.25)	0.013
Current smoker	5.13 (4.10 to 6.41)	< 0.001	1.18 (0.82 to 1.70)	0.385
Alcohol intake				
Never drinking	1		1	
Ever drinking	2.73 (2.11 to 3.54)	< 0.001	1.29 (0.92 to 1.80)	0.143
Current drinking	1.59 (1.10 to 2.29)	0.014	0.79 (0.48 to 1.31)	0.363
Drug intake				
No	1		1	
Yes	5.36 (4.31 to 6.65)	< 0.001	1.86 (1.37 to 2.53)	< 0.001
Exposed to medical marijuana content				
No	1		1	
Yes	3.32 (2.62 to 4.22)	< 0.001	1.80 (1.35 to 2.41)	< 0.001
Perceived risk				
High	1		1	
Low	12.47 (7.72 to 20.14)	< 0.001	5.82 (3.50 to 9.67)	< 0.001
Perceived risk approved				
High	1		1	
Low	0.11 (0.09 to 0.14)	< 0.001	0.22 (0.16 to 0.29)	< 0.001

Hosmer and Lemeshow (p value=0.665), classification table (84.8%), Nagelkerke R² (19.9%) and multicollinearity and interaction terms were checked.
AOR, adjusted OR; AOR, adjusted OR; COR, crude OR; STPM, Sijil Tinggi Persekolahan Malaysia.

more inclined to support medical marijuana, likely due to increased access to scientific information and more progressive views on health innovations. This highlights the need to differentiate surface trends from deeper, independent predictors when shaping communication strategies.^{35–37}

Occupational status also played a role. Private sector employees and the self-employed expressed greater support than government employees, potentially reflecting varying levels³⁸ of regulatory exposure, workplace culture or perceived consequences of drug policies.⁴ Income appeared to influence attitudes: lower income respondents were more accepting, possibly due to greater interest in affordable or alternative therapies.²

Lifestyle behaviours, such as current or past smoking and drug use, were strongly associated with acceptance, echoing global findings that individuals with substance use history tend to view marijuana more favourably.^{39–41} These findings support the idea that familiarity may lead to greater openness, although it also highlights a need to ensure that public education around medical marijuana reaches individuals outside of these groups. In Malaysia's context, where public discourse on drugs is often moralised, such findings offer important entry points for targeted messaging that acknowledges lived experience while promoting evidence-based health narratives.

Perceived risk emerged as one of the strongest predictors of acceptance. Those who viewed medical marijuana as low risk were significantly more accepting, suggesting that risk perception is central to public decision-making on health policies.^{37,42} It also reinforces the importance of public education campaigns that provide balanced information on both the benefits and risks of medical marijuana, especially in settings where misconceptions are common. Healthcare providers, despite their cautious stance, showed moderate openness towards the therapeutic use of cannabis, suggesting a potential window for professional engagement and policy dialogue in clinical settings.

Religion and cultural norms also provide an important backdrop. Malaysia's Islamic majority, along with other faith communities, typically views intoxicants through a moral lens. However, Islamic jurisprudence allows medical exceptions under the principle of *darurah* (necessity), which may help foster broader acceptance.^{10,43} Compared with neighbouring Muslim-majority countries with similar legal restrictions, Malaysia appears more open to engaging in discourse about cannabis for medical purposes, reflecting the nation's pluralistic society and evolving policy environment.⁴⁴ Stigma rooted in moral and religious narratives persists, particularly among older or less-educated groups, and may hinder

broader societal acceptance.²⁴ Addressing these sensitivities requires communication strategies that frame cannabis use within a medical, rather than recreational, lens, which is anchored in both scientific and religious rationales.

Globally, countries like Portugal and Netherlands offer models of decriminalisation focused on health rather than punishment, providing useful comparative lessons.⁴⁴ Although Malaysia continues to operate under a more restrictive legal framework, the rising level of public acceptance observed in this study suggests openness to gradual, carefully guided policy shifts. Any future adaptation, however, must align with Malaysia's legal structure and respect prevailing religious and cultural expectations.^{45 46}

The findings also highlight the importance of acknowledging the diverse factors that shape public acceptance when considering policy directions for medical marijuana. While favourable public opinion does not replace the need for strong clinical evidence, it represents an important indicator of policy readiness and informs how health messaging should be tailored. The high level of support identified in this study suggests that Malaysians may be receptive to the regulated medical use of cannabis, provided that decisions are grounded in scientific evidence. Meaningful policy development should be informed by robust data on therapeutic needs, clinical effectiveness and long-term safety. Additional research is, therefore, needed before major policy changes are pursued, ensuring that any future framework remains evidence-based, patient-centred and compatible with Malaysia's sociocultural environment.

Study strengths and limitations

The study strengths lie in its large, geographically diverse sample and digital data collection approach, which enabled wide outreach across demographic and regional lines. The dual-language format further enhanced accessibility.

Limitations include the use of non-probability sampling, which introduces potential selection bias and restricts generalisability. Participation was also limited to individuals with internet access, potentially under-representing rural and lower income populations. Additionally, self-reported data on sensitive behaviours, such as drug use and smoking, may be subject to under-reporting due to social desirability bias, and individuals with stronger interests or opinions regarding medical marijuana may have been more likely to participate in the survey. Despite these limitations, this study provides valuable preliminary insights into public acceptance of medical marijuana in Malaysia.

Despite adjusting for several confounders through multivariable logistic regression, including variables with p values < 0.25 in univariate analysis, residual confounding may persist—particularly from prior marijuana use and gender—which may independently influence both perceived risk and acceptance. While VIFs indicated low

multicollinearity, and model fit was supported by diagnostic tests (Hosmer–Lemeshow, classification table), the possibility of unmeasured or uncontrolled confounding cannot be fully excluded. In particular, the over-representation of male respondents may limit the generalisability of findings across genders.

A specific methodological note concerns the consistent use of the term '*medical marijuana*' throughout the survey. While chosen for clarity and resonance with the Malaysian public discourse, this term may evoke stronger negative reactions than alternatives like '*medical cannabis*' due to historical and media-related associations. Future studies may consider comparing terminology to explore how linguistic framing influences public attitudes.

Another limitation is the inability to conduct a detailed regional comparison due to insufficient subgroup sizes. Malaysia's regional diversity may influence perceptions of cannabis differently and further studies are warranted to examine these nuances. Although the survey focused specifically on medical marijuana, some respondents may have conflated medical and recreational use. This highlights the need for clearer public education campaigns that distinguish between the two and frame policy debates within well-defined clinical parameters.

CONCLUSIONS

This study provides foundational evidence of increasing public acceptance of medical marijuana in Malaysia, influenced by sociodemographic characteristics, behavioural patterns and individual perceptions of risk. The findings highlight the importance of developing clear, culturally appropriate public education efforts to address misconceptions and support informed discussions about medical marijuana. Further research, including clinical, regulatory and community-focused studies, is needed to guide careful and evidence-based policy development. As global perspectives on medical cannabis continue to evolve, understanding Malaysian attitudes will remain crucial to ensuring that any future regulatory decisions are appropriate, effective and aligned with societal values. Future studies should consider using nationally representative, probability-based sampling methods to improve generalisability. Longitudinal designs may help assess changes in public acceptance over time, particularly in response to policy or regulatory developments. In addition, qualitative studies and research involving healthcare professionals and policymakers could provide deeper insights into the factors shaping acceptance of medical marijuana in Malaysia.

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