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Unmet family planning needs in Malaysia: prevalence, associated factors, and implications for targeted interventions

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Abstract

Background Family planning is a fundamental strategy to enhance the well-being of women, their partners, and children however, disparities among certain groups of women of reproductive age (WR) persist. This study aims to estimate the prevalence of unmet family planning needs among WR in Malaysia and its associated factors.

Methods Data from the 2022 national health survey were utilized. Face-to-face interviews were conducted using a standard questionnaire on contraceptive use among the eligible WR who provided written consent. Unmet needs refer to fecund WR who are not using any contraceptive method but wish to either limit childbearing (cease having children) or space pregnancies (delay their next birth).

Results Out of 1,987 eligible WR, 1,877 respondents were interviewed, resulting in an 86.6% response rate. This study focused on 1,236 WR who were currently married or in a union and fecund. The prevalence of unmet family planning needs was 26.7% (95% CI: 22.6, 31.3) with 20.7% (95% CI: 17.1, 24.8) attributed to unmet needs for limiting and 6.0% (95% CI: 3.9, 9.3) for spacing. Unmet family planning needs were associated with WR who resided in Peninsular Malaysia (adjusted Odds Ratio (aOR) = 2.42, 95% CI: 1.36, 4.30), those employed in the private sector (aOR = 2.07, 95% CI: 1.16, 3.66), and those aged 35 years and above (aOR = 1.70, 95% CI: 1.08, 2.66).

Conclusions Unmet family planning needs are prevalent in Malaysia and associated with specific WR groups. An in-depth study should follow these findings to identify barriers in accessing family planning services, which are currently available.

Keywords Family planning, Women of reproductive age, Malaysia, Household survey, Contraception

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Introduction

Unmet family planning needs describe a situation where women of reproductive age (WR), who are married or in a sexual union, sexually active, fecund, and wishing to delay or prevent pregnancy, do not use any form of contraception [1]. The definition has been periodically revised to maintain global comparability. It is widely recognized as a critical indicator of gaps in reproductive health services, reflecting the inability of WR to access or effectively use contraceptive methods despite their expressed desire to avoid pregnancy [2]. Globally, unmet family planning needs continue to be a significant public health concern, with the number of WR experiencing unmet needs rising from 147 million in 1990 to 164 million in 2022 [3]. This issue is closely linked to unplanned, unintended, or mistimed pregnancies, which can have serious adverse effects on both maternal and child health [4, 5]. In 2019, of the 111 million unintended pregnancies in low- and middle-income countries (LMICs), approximately 35 million resulted in unsafe abortions, 30 million continued as unplanned births, 12 million ended in miscarriages, and one million in stillbirths [6]. Contraception prevents pregnancy-related health risks for women, especially for adolescent girls, and reduces infant mortality due to poor birth spacing [4, 5].

The global prevalence of unmet family planning needs is monitored at the global level, with rates varying across regions from 9.0 to 38.0% [3]. Malaysia is grouped within the Eastern and South-Eastern Asia region, which has the lowest percentage of unmet needs among other regions at 9.0% [3]. Furthermore, numerous studies have identified factors associated with unmet family planning needs, but many of these studies originate from African countries that have higher fertility rates and unmet needs [7, 8]. Among the associated factors, age plays a pivotal role, some studies have found that older age was associated with a decrease in unmet needs [9–11] while others show contradicting findings [12, 13] or no significant results [14]. Various studies have shown an inverse relationship between education level and unmet family planning needs, with higher levels of education consistently associated with lower unmet needs [8, 9, 15]. Additionally, another systematic review conducted in Ethiopia found that housewives were more likely to face unmet family planning needs than WR working in government jobs [16]. Geographical disparities, especially between urban and rural areas, further compound the issue, as WR in rural settings often experience limited access to healthcare infrastructure and contraceptive options, contributing to a higher prevalence of unmet needs [17]. Household income is another critical factor, where both the poorest and middle-income groups encounter barriers often due to financial constraints [17, 18]. Socioeconomic factors, access to healthcare, cultural norms, and education all contribute to the variation in unmet needs.

In line with the Sustainable Development Goals (SDGs) target 3.7, this study stems from the need to better understand the sociodemographic factors contributing to unmet family planning needs in Malaysian context. By identifying the prevalence and associated factors of unmet family planning needs, this study aims to provide critical insights to inform targeted interventions that can improve access to contraceptive services and reduce the prevalence of unmet family planning needs among WR in Malaysia.

Methodology

This study used a cross-sectional design based on a nationally representative sample. Data from the 2022 household survey were utilized. The study employed a two-stage cluster random sampling approach based on the geographical enumeration blocks (EBs) sampling frame to select households with mothers and children under five. A subsample of EBs (700 out of 1029 EBs) was randomly chosen to identify households with WR. Sample sizes were calculated using both single and two-proportion formulas. The single proportion formula was calculated using a prevalence of 25% [19], precision of 0.05, and 95% confidence level, therefore the minimum sample size of 288 is required for single strata. In addition, a two-proportion sample size was calculated to compare between two categorical groups. Information from previous studies was used to calculate the prevalence of unmet family planning needs among women aged ≤ 35 years (27.9%) and > 35 years (12.8%) [20]. The formula is as follows:

- p1 = 0.279 (the proportion for group 1).
- p2 = 0.128 (the proportion for group 2).
- Zα/2 = 1.96 for a 95% confidence level.
- Zβ = 0.84 for 80% power.

$$n = (Z_{\alpha/2} + Z_{\beta})^2 \times \frac{[p_1(1-p_1) + p_2(1-p_2)]}{(p_1 - p_2)^2} \quad (1)$$

$$n = (1.96 + 0.84)^2 \times \frac{[0.279 \times (1-0.279) + 0.128 \times (1-0.128)]}{(0.279 - 0.128)^2} \quad (2)$$

$$n = 108 \quad (3)$$

Thus, the minimum required sample size for each group would be approximately 108 respondents and the total sample of 1236 was deemed sufficient to achieve the desired power and significance levels, ensuring the robustness and reliability of the results.

Data collection

The total number of selected living quarters targeting WR from the sampling frame was 2800. For living quarters with more than one eligible WR, the Kish Grid Method was used to select only one respondent. Of the total 1987 eligible living quarters, 1877 respondents were successfully interviewed with a response rate of 86.6%. About 67 data collector teams were formed consisting of the research core team members, a group of registered nurses from 16 states, and 140 research assistants who attended a one-week intensive field training session prior to the actual survey. Tablet devices were used throughout the data collection to ensure a smooth data transfer process to the central team. Face-to-face interviews were conducted using a validated questionnaire to collect data on sociodemographic and contraceptive use adapted from the Multiple Indicator Cluster Survey (MICS) questionnaire [21].

Variables definitions

The socio-demographic data covered the variables of women's age, location by state and zone and urban or rural areas, ethnicity, marital status, educational level, and occupation. Peninsular Malaysia, which consists of 13 states, is divided into four zones: north, east, central, and south. Meanwhile, Sabah, Sarawak, and the Federal Territory (FT) of Labuan were grouped together as a separate zone. The questionnaire evaluated the infecund status of WR, defining a woman as infecund if she is neither pregnant nor postpartum amenorrheic, and meets any of the following criteria: (a) has not menstruated for at least six months, (b) has never menstruated, (c) her last menstruation occurred before her last birth, (d) is menopausal, (e) has had a hysterectomy, (f) has unsuccessfully attempted pregnancy for two or more years, (g) states she is unable to conceive when asked about future childbearing, or (h) has not given birth in the past five years, has never used contraception, is currently married or in a union, and has been continuously married or in a union over the last five years. This study adopted the definition of unmet family planning needs as outlined by Bradley et al. [1]. Unmet needs refer to WR who are fecund, not using any contraceptive method, and who wish to either limit the number of children (cease having children) or space pregnancies (delay their next birth). The definition also includes pregnant women whose pregnancies were unintended or mistimed at the time of conception, as well as postpartum amenorrhoeic women who are not using contraception and whose last pregnancies were similarly unintended or mistimed, as illustrated in Fig. 1 [1].

WR was also assessed for the experience of controlling behavior by their partner. This includes women who reported having experienced any form of controlling behavior from their current or last partner, such as attempts to stop them from meeting friends, restricting their relationships with biological family members,

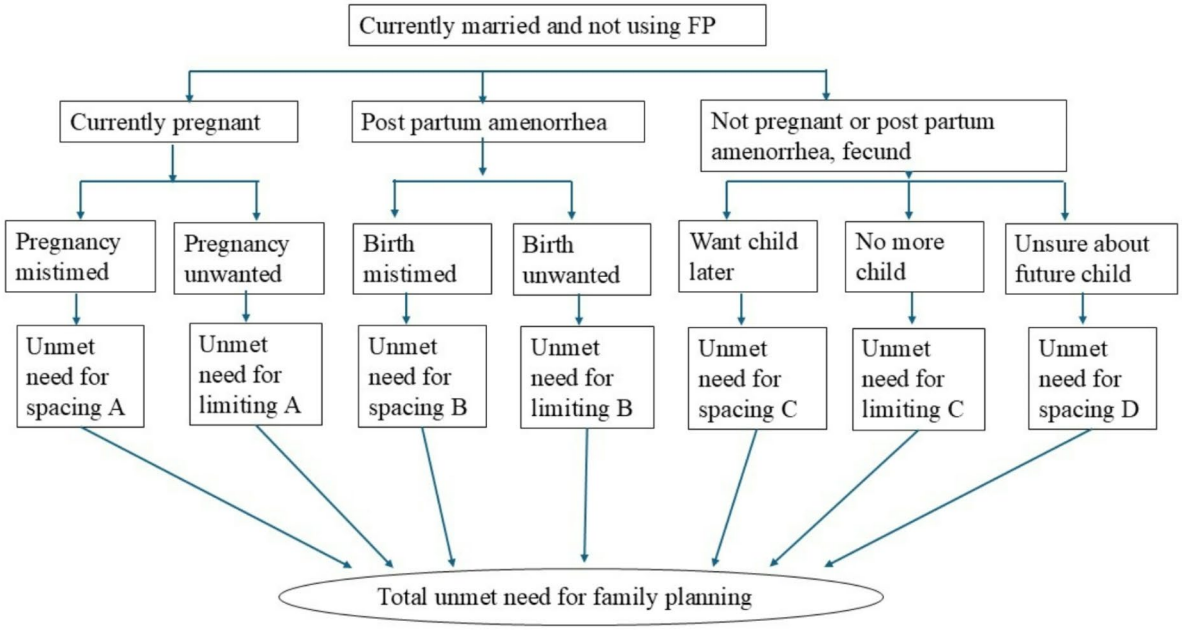

Fig. 1 Definition of unmet family planning needs among WR aged 15–49 years who were married or in union in this study

demanding to know their whereabouts at all times, ignoring them or treating them as if they do not exist, expressing anger if they speak with another man, suspecting them of infidelity, or requiring them to seek permission before accessing healthcare for themselves. These questions were adapted from the intimate partner violence questionnaire [22, 23].

Data analysis

Data were exported from Microsoft Excel to IBM SPSS version 25.0 for analysis. Missing data were identified and excluded from the final dataset. Descriptive analysis was performed to summarize the basic sociodemographic characteristics of the respondents. The dependent variable was the unmet family planning needs, and bivariate analysis was conducted to determine associations with the independent variables. Simple logistic regression, followed by multivariable logistic regression, was used to identify factors associated with unmet needs, based on the adjusted odds ratios (aOR), 95% confidence intervals (CI), and p-values while accounting for the complex sample design. Model fitness was evaluated using the complex sample design classification table, with an acceptable threshold of over 70%.

Table 1 Sociodemographic profile of women of reproductive age who were currently married or in union and fecund, $N = 1236$

Variables	*n*	%
Age group (years)		
15–19	4	0.3
20–24	84	6.8
25–29	245	19.9
30–34	307	25.0
35–39	299	24.3
40–44	193	15.7
45–49	98	8.0
Ethnicity		
Malay	903	73.4
Chinese	61	5.0
Indian	58	4.7
Other Bumiputera	148	12.0
Others	60	4.9
Strata		
Urban	872	70.6
Rural	364	29.4
Zone		
South (Peninsular Malaysia)	217	17.6
North (Peninsular Malaysia)	396	32.0
East (Peninsular Malaysia)	276	22.3
Central (Peninsular Malaysia)	129	10.4
Sabah, Sarawak & FT Labuan	218	17.6
Level of education		
Secondary and below	719	59.1
Tertiary	498	40.9
Occupation		
Government or semi	229	18.8
Private employee	215	17.7
Employer or self-employed	146	12.0
Not working	628	51.6
Household income		
Q1 (20% poorest)	308	25.0
Q2	186	15.1
Q3	307	24.9
Q4	236	19.1
Q5 (20% richest)	196	15.9

Ethical approval

The study was conducted according to the Declaration of Helsinki. This study obtained ethical approval from the Medical Research and Ethics Committee, Ministry of Health Malaysia. The study also has been registered with the national number of NMRR-20-959-53329. Written consent was taken from the respondents before the interview started.

Results

A total of 1,236 WR, who were currently married or in union and fecund, were included in the analysis (Table 1). The largest proportion of them were in the 30 to 34 years age group (25.0%), followed closely by those aged 35 to 39 years (24.3%). Malay ethnicity was the most represented group (73.4%), followed by Other Bumiputera (12.0%). The majority of participants resided in urban areas (70.6%), with the North zone accounting for 32.0% of the sample. In terms of education, 59.1% of women had secondary education or below, while 40.9% had tertiary education. More than half of the WR (51.6%) were not working. Income distribution showed that 25.0% of women were in the lowest 20% income group (Quintile 1), while 15.9% belonged to the top 20% (Quintile 5).

The prevalence of unmet family planning needs was 26.7% (95% CI: 22.6, 31.3) with 20.7% (95% CI: 17.1, 24.8) attributed to unmet needs for limiting and 6.0% (95% CI: 3.9, 9.3) for spacing. Women aged 35 years and above had a significantly higher prevalence of unmet needs (32.0%) compared to younger women (22.6%) ($p = 0.030$). A detailed prevalence across age groups is shown in Fig. 2. A higher prevalence was also observed among women with tertiary education (29.9%) compared to those with secondary education or below (24.6%), though the difference was not statistically significant ($p = 0.215$). Unmet needs were more prevalent in urban (28.8%) versus rural areas (20.8%), though this difference approached but did not reach statistical significance ($p = 0.060$). WR in the Central zone reported the highest prevalence (37.3%), while those in the Sabah, Sarawak and FT Labuan zone had the lowest (12.2%) ($p = 0.002$). Significant associations were also found for occupation ($p = 0.009$), with private employees having the highest prevalence (38.2%),

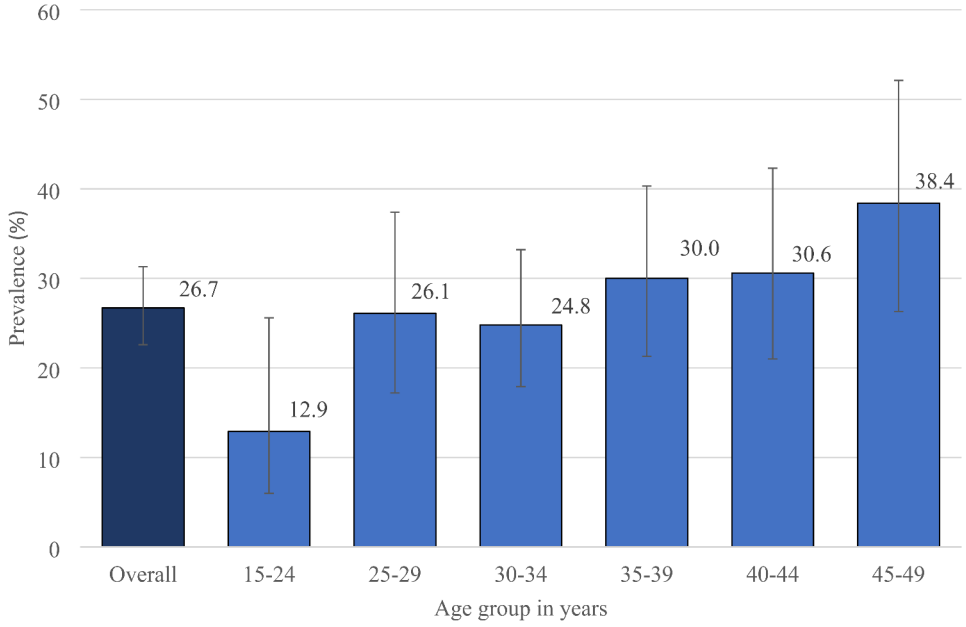

Fig. 2 Prevalence of unmet family planning needs by age group

and household income ($p = 0.009$), with the middle-income group (32.1%) showing the highest prevalence of unmet needs (see Table 2).

Multivariable logistic regression analysis identified several factors associated with unmet family planning needs. WR aged 35 years and older were at 70% higher odds of having unmet needs compared to younger women (aOR = 1.70, 95% CI: 1.08, 2.66, $p = 0.021$). Private employees were more likely to have unmet needs than unemployed WR (aOR = 2.06, 95% CI: 1.16, 3.66, $p = 0.014$). Living in Peninsular Malaysia was associated with more than a twofold increase in the odds of having unmet needs compared to those living in Sabah, Sarawak and FT Labuan (aOR = 2.42, 95% CI: 1.36, 4.30, $p = 0.003$). Other sociodemographic factors, including education level, rural-urban strata, and household income, were not significantly associated with unmet needs in the adjusted model (see Table 3).

Discussion

The findings of this study indicate that the prevalence of unmet family planning needs among WR age in Malaysia remains high at 26.7%. This rate aligns with previous studies conducted by the National Population and Family Development Board (NPFDB), which reported a prevalence of 25% in 2004 and 19.4% in 2014 [24, 25]. Although this figure exceeds the United Nations' country estimate, a possible explanation is that this study focused on unmet needs among married or in union WR, resulting in a smaller denominator than that used by the United Nations. Additionally, Malaysia's predominantly Muslim population, where Islamic law prohibits sexual activity outside of marriage and such behavior is socially disapproved of, may also contribute to this difference [25].

Age is a significant determinant of the unmet family planning needs, and the findings of this study are consistent with those from Indonesia [26] Myanmar [20], and several African countries [12, 27, 28]. However, the results differ from studies conducted in Mumbai [29], Pakistan [30], and most low- and middle-income countries [7] where age was negatively associated with unmet needs—indicating that as age increases, the unmet needs decrease. While age is an important factor, the variability in findings suggests that many other influencing factors must be considered simultaneously. According to the United Nations, the contraceptive use rate is the highest among women aged 25 to 44, but the unmet needs are more prevalent among younger women [3]. In this study, the higher prevalence of unmet needs among WR aged 35 years and above suggests that older women may face unique barriers in accessing family planning services. These barriers could include misconceptions about the necessity of contraception in later reproductive years or prioritization of other responsibilities, such as career, over healthcare [31, 32]. Additionally, it may point to inadequate targeting of family planning campaigns toward this age group [33]. Addressing these age-related disparities requires tailored outreach and educational programs for older women to ensure they are fully informed about their contraceptive options.

Our findings also reveal significant regional disparities, with WR in Peninsular Malaysia more likely to experience unmet family planning needs than those in Sabah, Sarawak, and FT Labuan. This disparity may be explained

Table 2 Prevalence of unmet family planning needs by the sociodemographic profiles, $N = 1236$

Variables	Unmet need				Met Need				*p*-value
	n	%	95% CI		*n*	%	95% CI		
			lower	upper			lower	upper	
Overall unmet needs	288	26.7	22.6	31.3	948	73.3	68.7	77.4	-
Unmet need for limiting	215	20.7	17.1	24.8	1021	79.3	75.2	82.9	
Unmet need for spacing	73	6.0	3.9	9.3	1163	94.0	90.7	96.1	
Age group									
< 35 years	138	22.6	17.5	28.6	502	77.4	71.4	82.5	
≥ 35 years	149	32.0	25.8	39.0	441	68.0	61.0	74.2	0.030
Level of education									
Secondary and below	159	24.6	19.6	30.4	560	75.4	69.6	80.4	
Tertiary	123	29.9	23.5	37.2	375	70.1	62.8	76.5	0.215
Strata									
Urban	207	28.8	23.7	34.6	665	71.2	65.4	76.3	
Rural	81	20.8	15.3	27.5	283	79.2	72.5	84.7	0.060
Zone									
South (Peninsular Malaysia)	59	28.9	20.1	39.7	158	71.1	60.3	79.9	
North (Peninsular Malaysia)	91	28.5	19.4	39.9	305	71.5	60.1	80.6	
East (Peninsular Malaysia)	66	25.4	18.4	34.0	210	74.6	66.0	81.6	
Central (Peninsular Malaysia)	42	37.3	26.8	49.1	87	62.7	50.9	73.2	
Sabah, Sarawak & FT Labuan	30	12.2	7.6	19.0	188	87.8	81.0	92.4	0.002
Occupation									
Government or semi	54	21.6	15.2	29.6	175	78.4	70.4	84.8	
Private employee	61	38.2	28.5	48.9	154	61.8	51.1	71.5	
Employer or self-employed	36	33.7	20.6	49.8	110	66.3	50.2	79.4	
Not working	131	21.3	16.1	27.6	497	78.7	72.4	83.9	0.009
Household income									
Below 40%	99	19.3	14.7	24.8	395	80.7	75.2	85.3	
Middle 40%	130	32.1	25.3	39.6	413	67.9	60.4	74.7	
Top 20%	58	29.0	20.8	38.9	138	71.0	61.1	79.2	0.009
Experience controlling behaviour from their partner									
No	184	28.1	22.8	34.1	595	71.9	65.9	77.2	
Yes	104	24.5	18.5	31.8	352	75.5	68.2	81.5	0.422

by differences in healthcare infrastructure, accessibility, and socioeconomic conditions between the two regions [34]. Although Peninsular Malaysia has a more developed healthcare system, there remain pockets of inequality where certain groups, particularly urban private-sector employees, may face difficulties in balancing work and healthcare access [35, 36]. Similar regional differences in unmet family planning needs have been observed in previous studies [37, 38], aligning with the results of this research.

The higher prevalence of unmet family planning needs among WR working in the private sector suggests that work-related factors, such as long working hours and limited health benefits, may hinder their ability to access family planning services, which are typically offered during office hours at public health facilities. A previous study indicated that non-Bumiputera, urban, higher-educated, and working women are more likely to seek family planning services from private healthcare providers [39]. In contrast, government employees experience lower unmet needs, likely due to the flexibility to visit public health facilities during work hours with supervisor approval. To address this, policymakers should consider implementing workplace policies that enhance access to reproductive health services, such as flexible healthcare arrangements and employer-supported family planning programs.

This study identified three significant factors contributing to unmet family planning needs, while place of residence, educational level, household income, and partner controlling behavior were found to be insignificant. The lack of significant results may be attributed to the widespread availability of family planning services through public facilities, which are accessible to WR in both urban and rural areas, regardless of their educational or economic status. Additionally, the increasing number of Malaysian WR with higher education levels, stable careers, and financial independence suggests that many are making autonomous decisions about their reproductive health [40].

Table 3 Factor associated with unmet family planning needs among women of reproductive age in Malaysia, *N* = 1236

Variable	Crude OR	95% CI		*p*-value	#AOR	95% CI		*p*-value
		lower	upper			lower	upper	
Age group								
< 35 years	1.00	-	-		1.00	-	-	
≥ 35 years	**1.99**	**1.25**	**3.19**	**0.004**	**1.70**	**1.08**	**2.66**	**0.021**
Level of education								
Secondary and below	0.76	0.50	1.17	0.216	0.81	0.49	1.35	0.422
Tertiary	1.00	-	-		1.00	-	-	
Strata								
Urban	1.55	0.98	2.44	0.061	1.16	0.70	1.90	0.570
Rural	1.00	-	-		1.00	-	-	
Zone								
Peninsular Malaysia	**3.22**	**1.81**	**5.75**	**< 0.001**	**2.422**	**1.363**	**4.302**	**0.003**
Sabah, Sarawak & FT Labuan	1.00	-	-		1.00	-	-	
Occupation								
Government or semi	1.02	0.59	1.75	0.957	0.80	0.41	1.57	0.514
Private employee	**2.28**	**1.33**	**3.92**	**0.003**	**2.06**	**1.16**	**3.66**	**0.014**
Employer or self-employed	1.88	0.89	3.95	0.097	1.65	0.79	3.44	0.184
Not working	1.00	-	-		1.00	-	-	
Household income								
Below 40%	0.58	0.34	1.01	0.055	1.07	0.50	2.31	0.854
Middle 40%	1.15	0.68	1.97	0.599	1.47	0.79	2.74	0.229
Top 20%	1.00	-	-		1.00	-	-	
Experience controlling behaviour from their partner								
No	1.00	-	-		1.00	-	-	
Yes	0.83	0.53	1.31	0.422	0.82	0.52	1.30	0.400

#adjusted odds ratios, adjusted with all the variables. Classification table percentage: 74.1% correctly predicted

Strengths and limitations

This study investigated the sociodemographic factors associated with unmet family planning needs among WR in Malaysia, utilizing a nationally representative sample. The findings offer new insights that differ from those observed in other low- and middle-income countries, highlighting the unique context of women in Malaysia. However, the cross-sectional design of the study limits its ability to establish causal relationships between the variables studied.

Key policy recommendations from this study

1. Targeted Interventions for Older Women (≥ 35 years): Recommendation: Develop and implement targeted family planning campaigns and services specifically aimed at women aged 35 and above, as this group has been found to have a higher prevalence of unmet needs. Educational programs should focus on dispelling misconceptions about contraceptive use in later reproductive years and ensure that family planning services address the specific needs of older women.
2. Workplace Policies for Private Sector Employees: Recommendation: Encourage private-sector employers to introduce reproductive health programs and provide flexible healthcare access. This includes enabling employees to attend family planning consultations during working hours or offering employer-supported family planning services. Private-sector employees had higher unmet needs, likely due to work-related barriers, such as long hours and limited access to healthcare during office hours.
3. Improve Access to Family Planning Services in Peninsular Malaysia: Recommendation: Policymakers should focus on reducing regional disparities in family planning services, particularly in Peninsular Malaysia, where unmet needs were significantly higher compared to Sabah, Sarawak and FT Labuan. Enhancing healthcare infrastructure, increasing the availability of family planning services, and addressing the needs of urban-poor populations in Peninsular Malaysia should be prioritized.
4. Public-Private Healthcare Partnerships: Recommendation: Foster partnerships between public and private healthcare sectors to expand the reach and accessibility of family planning services. Private healthcare providers can complement public services, especially in areas where access to public health facilities is limited or where private-sector

employees face barriers, such as incentive and insurance coverage.

5. Cultural and Behavioral Interventions: Recommendation: Tailor family planning services and educational campaigns to address cultural and religious factors influencing contraceptive use. For example, in predominantly Muslim regions, align family planning messages with religious and cultural sensitivities to ensure greater acceptance and uptake.
6. Regional Health Strategies: Recommendation: Develop region-specific strategies to address the geographical disparities observed in unmet needs for family planning. Policymakers should focus on improving healthcare access in underserved zones, particularly in urban areas of the central zone, which reported the highest prevalence of unmet needs.

Conclusion

The prevalence of unmet family planning needs among WR age remains a significant public health concern, with over one-quarter (26.7%) of WR experiencing unmet needs in Malaysia. Key sociodemographic factors associated with unmet needs for family planning include older age, with WR aged 35 years and above being significantly more likely to have unmet needs. In addition, private-sector employees and those living in Peninsular Malaysia also face disproportionately higher unmet needs. These findings highlight the need for targeted interventions, particularly for older WR, those in the private sector, and those residing in Peninsular Malaysia, particularly urban poor, to address the barriers to accessing contraception and family planning services. Expanding access to ensure tailored family planning services for these vulnerable groups is crucial to reducing unmet needs.

Abbreviations

aOR	Adjusted odds ratios
CI	Confidence interval
EBs	Enumeration blocks
FT	Federal territory
LMICs	Low- and middle-income countries
NPFDB	National population and family development board
MICS	Multiple indicator cluster survey
MREC	Medical research and ethics committee
OR	Odds ratios
SDGs	Sustainable development goals
WR	Women of reproductive age

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Author contributions

W.S.A.W.J., S.M.A., M.S.A.K. and N.A. contributed to the design of the study, data cleaning, data analysis, and interpretation of the findings. W.S.A.W.J., S.M.A., N.H., N.A.W. and N.S. drafted the manuscript. Finally, the paper is reviewed and criticized by N.H.S. and N.A. Finally, all authors approved the final version of the manuscript.

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Data availability

The dataset for this study is available upon request to the corresponding author. The main author kept the dataset according to the National Institutes of Health Malaysia research data repository guidelines.

Declarations

Ethical approval

The study was conducted according to the Declaration of Helsinki. This study obtained ethical approval from the Medical Research and Ethics Committee, Ministry of Health Malaysia. The study also has been registered with the national number of NMRR-20-959-53329. Written consent was taken from the respondents before the interview started.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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