



## Understanding factors related to healthcare avoidance for menstrual disorders and menopausal symptoms: A cross-sectional study among women in Japan

Manae Uchibori<sup>a,b</sup>, Akifumi Eguchi<sup>a,c</sup>, Cyrus Ghaznavi<sup>a,d</sup>, Yuta Tanoue<sup>a,e</sup>, Mami Ueta<sup>f</sup>, Miho Sassa<sup>f</sup>, Shu Suzuki<sup>g</sup>, Sayaka Honda<sup>g,h</sup>, Yukiko Kawata<sup>g</sup>, Miho Iida<sup>i</sup>, Haruka Sakamoto<sup>b,g,j,1</sup>, Shuhei Nomura<sup>a,b,f,\*,1</sup>

<sup>a</sup> Department of Health Policy and Management, School of Medicine, Keio University, Tokyo, Japan

<sup>b</sup> Tokyo Foundation for Policy Research, Tokyo, Japan

<sup>c</sup> Center for Preventive Medical Sciences, Chiba University, Chiba, Japan

<sup>d</sup> Department of Medicine, University of California San Francisco, San Francisco, USA

<sup>e</sup> Faculty of Marine Technology, Tokyo University of Marine Science and Technology, Tokyo, Japan

<sup>f</sup> Department of Global Health Policy, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

<sup>g</sup> Health and Global Policy Institute, Tokyo, Japan

<sup>h</sup> General Internal Medicine, St Luke's International Hospital, Tokyo, Japan

<sup>i</sup> Department of Preventive Medicine and Public Health, Keio University School of Medicine, Tokyo, Japan

<sup>j</sup> Department of Hygiene and Public Health, Tokyo Women's Medical University, Tokyo, Japan

### ARTICLE INFO

#### Keywords:

Women's health  
Healthcare seeking behavior  
Healthcare avoidance behavior  
Menstrual disorders  
Menopausal symptoms

### ABSTRACT

This study explored the factors associated with healthcare avoidance behavior for menstrual disorders and menopausal symptoms among women in Japan. Using data from a nationally representative cross-sectional online survey conducted in September 2022, responses from 4,950 women aged 25–59 were analyzed. This study applied binomial logistic regression models specifically to participants who reported having ever felt the need to seek healthcare assistance due to health issues related to menstruation and menopause. We computed adjusted odds ratios for key sociodemographic traits, work environment factors, health literacy, menstrual and menopausal symptoms, and attitudes and understanding regarding women's health, associated with healthcare avoidance behavior in the past 12 months. As a sensitivity analysis, a regression was performed limited to those who are working. The results showed that 50.6% of respondents recognized the need for healthcare support for menstrual or menopausal health issues, but 22.8% exhibited healthcare avoidance in the past year. Younger and high-income individuals showed higher avoidance rates. Those with diagnosed gynecological conditions and those perceiving menstrual pain as something to endure also displayed increased avoidance tendencies. Women experiencing significant health effects beyond work and those lacking understanding of the purpose of health check-ups were more prone to healthcare avoidance. Our results underscore the importance of implementing strategically tailored health education initiatives, and re-examining societal attitudes concerning women's health, in order to cultivate enhanced healthcare-seeking behaviors among women.

### 1. Introduction

Premenstrual syndrome (PMS), dysmenorrhea, and menopausal symptoms pose major health challenges for women across the life

course. According to a survey conducted in Australia focusing on a cohort born between 1973 and 1978, approximately 80% of women aged 22 to 27 experienced PMS during their reproductive life, and nearly 60% reported experiencing dysmenorrhea (Ju et al., 2014). A survey

\* Corresponding author at: Department of Health Policy and Management School of Medicine, Keio University, 35 Shinanomachi, Shinjuku-ku, Tokyo 160-8582, Japan.

E-mail address: [s-nomura@keio.jp](mailto:s-nomura@keio.jp) (S. Nomura).

<sup>1</sup> Authors shared co-last authorship.

<https://doi.org/10.1016/j.pmedr.2023.102467>

Received 18 July 2023; Received in revised form 3 October 2023; Accepted 9 October 2023

Available online 11 October 2023

2211-3355/© 2023 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

conducted in Japan in 2021, which involved a wider age range of respondents aged 15–49 years, found that 74% reported suffering from menstrual symptoms including pain and heavy bleeding that interfered with their daily lives (Tanaka et al., 2013). Given the different age ranges and reproductive stages, direct comparisons between these two cohorts may not be appropriate. Furthermore, the influence of culture on experiences and perceptions, especially in the realm of menstrual health, suggests that Australian young women might exhibit different reporting behaviors compared to Japanese women (Anderson and Yoshizawa, 2007). A comprehensive literature review indicates that dysmenorrhea, despite discrepancies in symptom definitions across different studies, is reported to affect between 45% and 95% of menstruating women (Iacovides et al., 2015).

Nevertheless, some women make the decision to forgo seeking healthcare assistance despite experiencing health issues related to menstruation or menopause (Tanaka et al., 2013). Despite the potential impact on their social and work lives, these women often underestimate their symptom severity and hesitate to seek advice for treatable conditions due to attitudinal barriers (Robinson and Swindle, 2000). The reasons for not consulting a doctor regarding dysmenorrhea include the belief that the symptoms are normal, limited awareness regarding available treatment options, and the perception that the symptoms are tolerable (Chen et al., 2018). Furthermore, the approach women take towards their health during the menopausal period can be influenced by various factors such as their personal experiences, family influences, and sociocultural backgrounds (Hoga et al., 2015).

Hesitating to seek healthcare for menstrual disorders can negatively impact individual health, productivity, and societal well-being (Borenstein et al., 2003). For example, primary dysmenorrhea is associated with reduced quality of life, negative mood, and poor sleep during menstruation (Iacovides et al., 2015). Women with a history of dysmenorrhea have a 2.6-fold increased risk of developing endometriosis, potentially leading to infertility (Treloar et al., 2010). Mental health issues and disrupted sleep patterns are more common among women with menstrual complications (Strine et al., 2005). In addition, untreated health conditions can significantly affect productivity, leading to increased absenteeism and reduced presenteeism in the workplace (Goetzel et al., 2004). Previous studies in Japan have shown a statistical correlation between dysmenorrhea and decreased work productivity (Yoshino et al., 2022). The economic burden of menstrual symptoms is substantial, estimated at around 683 billion Japanese Yen (approximately 8.6 billion USD) annually (Tanaka et al., 2013). Moreover, reluctance to seek appropriate care for menstrual symptoms reinforces misconceptions and stigma surrounding certain medical conditions, creating barriers to care. A parallel can be drawn to the self-stigma seen among individuals diagnosed with mental illnesses. Though societal prejudices are widely acknowledged, these individuals often internalize them, resulting in diminished self-worth and reluctance to pursue necessary medical assistance (Corrigan and Rao, 2012).

In Japan, the practice of consulting gynecologists specifically for menstrual and menopausal issues may create a potential barrier to healthcare-seeking for women experiencing these symptoms (Maekawa et al., 2023; Narumoto et al., 2022). Unlike many other countries where primary care physicians frequently consult with gynecologists, the practice is less common in Japan (Narumoto et al., 2022). While Japanese women benefit from a medical infrastructure that allows them to directly consult gynecologists based on their own judgment, the limited education on sexual and reproductive health and rights may pose a significant barrier to their healthcare-seeking behaviors (Murakami et al., 2020). This lack of literacy potentially hinders health-seeking behaviors, as evidenced by a study which showed a correlation between high health literacy and consultations with gynecologists among Japanese women (Imamura et al., 2020). Most of the existing evidence on menstrual symptoms and healthcare-seeking behaviors comes from Western countries, limiting our global understanding of this topic. Cultural factors heavily influence the relationship between women's

health and healthcare-seeking, emphasizing the importance of exploring regional differences for comprehensive insights. Thus, it is crucial to understand why some women choose not to seek healthcare in order to develop effective strategies and policies to overcome these barriers. Therefore, this study aims to identify factors associated with healthcare avoidance behavior related to menstrual disorders and menopausal symptoms among women in Japan.

## 2. Methods

### 2.1. Data source and population

The survey was conducted online through Cross Marketing Inc., an internet research company based in Japan. The company has a diverse panel whose voluntary participation is incentivized by “points,” reducing selection bias. This study targeted women aged 25–59 across Japan. We made a deliberate decision to focus on the age group of 25–59. In Japan, many students remain under their parents' insurance coverage until they start working, making it challenging to analyze their independent health-seeking behaviors as their insurance use and medical history can be visible to their parents. If students can graduate from a six-year university program without any delays, it would correspond to them being 24 years old. By targeting from the age of 25, we can minimize the inclusion of these students. On the other end, the upper age limit of 59 was chosen because menopausal disorders can persist for about a decade post-menopause, and hormone replacement therapy, often used for its treatment, is recommended for those under 60 (Academic Committee of the Korean Society of M et al., 2020). The quota sampling method employed considered age, gender, and prefecture population ratios from the 2015 Census, aiming to mirror Japan's demographic distribution. In Japan, the term “prefecture” represents the administrative division immediately below the national level. The survey was conducted in September 2022 and was closed upon reaching a pre-determined sample size of 10,000 individuals. It employed a first-come-first-served approach, mandating complete responses. The survey included 5,050 male respondents due to other research objectives, but their data is not included in this study. Therefore, the target population for this study consists of 4,950 female respondents. Ethics approval was granted by the ethics committee of the Health Outcome Research Institute (authorization no. 2021-03). Respondents had to provide their consent before they proceeded to the questionnaire response page.

The survey questionnaire was developed based on a thorough review of prior research on similar topics (Tanaka et al., 2013; Tanaka et al., 2013). The questionnaire covered various aspects related to the study, including sociodemographic characteristics, work environment, health literacy, history of menstrual and menopausal symptoms, and attitude and understanding toward women's health. All questions were designed as closed-ended questions, including binary “yes/no” questions, ordinal and nominal scales, and Likert scales. Details pertaining to the questionnaire can be found in the Supplementary Text.

### 2.2. Outcome

Healthcare avoidance behavior was evaluated with the question: “Within the past 12 months, have you ever reduced your medication dosage or avoided visiting a hospital despite feeling that healthcare intervention was necessary for health issues associated with menstrual symptoms (including PMS and dysmenorrhea) or menopausal symptoms?” The response options were structured as follows: 1 = “yes”, 2 = “somewhat”, 3 = “rarely”, 4 = “not at all”, and 5 = “did not perceived a need.” For data interpretation process, respondents who opted for “yes” or “somewhat” were categorized as exhibiting healthcare avoidance behavior and designated as “avoided,” while those who selected “rarely” or “not at all” were classified as not demonstrating this behavior, thus labeled as “not avoided.” Those who chose “did not perceived a need”

were omitted from the analysis.

### 2.3. Statistical analysis

Binomial logistic regression models identified factors linked with healthcare avoidance. The reference group was comprised of individuals who did not exhibit this behavior. Two models were built separately for all female respondents and employed ones. For regression models with numerous covariates or multicollinearity, a common approach to address complex optimization constraints and control for multicollinearity is the use of penalization methods. We employed the Least Absolute Shrinkage and Selection Operator (Lasso), a widely used penalization method that adds a penalty term to the likelihood, promoting sparsity within the covariate set by considering the sum of the absolute values of the coefficients (Tibshirani, 1996; Friedman et al., 2010; Tay et al., 2023). To mitigate any bias introduced by the Lasso penalization, the final models underwent a de-biasing procedure, where the selected covariate sets were refitted.

Associations with each covariate are presented as adjusted odds ratios (OR) for healthcare avoidance with their respective 95% confidence intervals (CI). Further information is available in the Supplementary Text. Statistical significance was defined as  $p < 0.05$  for all analyses. The chi-square test was primarily used to assess significance for categorical variables, while the *t*-test was employed for variables with continuous values such as age. Data analysis was performed using R version 4.2.2.

### 3. Results

Out of 4,950 female participants, half ( $n = 2,507$ , 50.6%) reported experiencing the need for healthcare assistance for menstrual or menopausal health issues within the past 12 months. Among them, nearly a quarter ( $n = 571$ , 22.8%) engaged in healthcare avoidance behavior. After excluding three participants with “other” educational backgrounds, our regression analysis included 2,504 participants. The sociodemographic characteristics of these participants, stratified by healthcare avoidance behavior, are summarized in Table 1. The average age of the participants was 43.0 years (standard deviation 9.4 years). More than half were married ( $n = 1,451$ , 57.9%), while half ( $n = 1,259$ , 50.3%) reported not having children. Regarding residential location, a small fraction ( $n = 322$ , 12.9%) resided in Tokyo Prefecture, and nearly a third ( $n = 802$ , 32.0%) lived in prefectural capitals in prefectures other than Tokyo Prefecture; 44.3% ( $n = 1110$ ) lived in cities outside of prefectural capitals. Prefectural capitals are the primary administrative cities in each prefecture, a regional division in Japan directly below the national level. Participants with at least a bachelor’s degree accounted for over a third ( $n = 862$ , 34.4%), and most ( $n = 1,715$ , 68.5%) were employed. The statistical analysis revealed that age and income were the only variables significantly associated with healthcare avoidance behavior.

Table 2 provides sociodemographic information specifically for employed women ( $n = 1,715$ ). Slightly over a fifth ( $n = 376$ , 21.9%) exhibited healthcare avoidance behavior. In terms of employment status, regular employees accounted for slightly less than half ( $n = 763$ , 44.5%), and the most common occupation type was administrative position, representing 39.0% ( $n = 669$ ) of the participants. Types of occupation were statistically significantly different between those with and without healthcare avoidance behavior. Regarding other socio-demographic factors, it was observed that both age and income displayed statistically significant correlations with healthcare avoidance behavior, consistent with the findings for the overall participants. Other variables of the overall participants and employed women can be found in Supplementary Tables 1 and 2, respectively.

Table 3 displays factors associated with healthcare avoidance behavior. After adjusting for covariates, it was found that age has a statistically significant connection with healthcare avoidance behavior, displaying a decreasing trend with advancing age (OR 0.98, 95% CI

**Table 1**

Sociodemographic characteristics of all female respondents from a 2022 survey in Japan, stratified by healthcare avoidance behavior.

	Total	Avoided <sup>1</sup>	Not avoided <sup>2</sup>	P-value
	(N = 2504)	(N = 571, 22.8%)	(N = 1933, 77.2%)	
<b>Age (mean, standard deviation)</b>	43.0 (9.4)	41.9 (9.2)	43.3 (9.4)	<0.01
<b>Marital status</b>				0.24
Married	1451 (57.9)	321	1130	
Not married	825 (32.9)	188	637	
Widowed / Divorced	228 (9.1)	62	166	
<b>Number of children</b>				0.91
0	1259 (50.3)	293	966	
1	476 (19.0)	106	370	
2	556 (22.2)	122	434	
More than 3	213 (8.5)	50	163	
<b>Residence</b>				0.95
Within Tokyo Prefecture	322 (12.9)	77	245	
Prefectural capitals in prefectures other than Tokyo	802 (32.0)	181	621	
Cities outside of prefectural capitals	1110 (44.3)	250	860	
Towns and villages	270 (10.8)	63	207	
<b>Highest educational level</b>				0.93
Middle school	70 (2.8)	15	55	
High school	765 (30.6)	178	587	
Junior college	807 (32.2)	179	628	
University	802 (32.0)	183	619	
Graduate school	60 (2.4)	16	44	
<b>Employment status</b>				0.06
Unemployed, homemaker, student	789 (31.5)	195	594	
Regular employees	763 (30.5)	183	580	
Part-time/temporary workers	628 (25.1)	119	509	
Dispatched/contracted employees	199 (7.9)	41	158	
Self-employed/Family employee/At-home worker	125 (5.0)	33	92	
<b>Annual income in 2021 (million JPY)</b>				<0.01
More than 10	35 (1.4)	17	18	
8–10	28 (1.1)	7	21	
6–8	65 (2.6)	13	52	
4–6	221 (8.8)	48	173	
2–4	539 (21.5)	140	399	
0–2	815 (32.5)	162	653	
0	508 (20.3)	131	377	
Don't know / Don't want to answer	293 (11.7)	53	240	

1. Regarding the question, “Within the past 12 months, have you ever reduced your medication dosage or avoided visiting a hospital despite feeling that healthcare intervention was necessary for health issues associated with menstrual symptoms (including PMS and dysmenorrhea) or menopausal symptoms?”, respondents who selected “yes” or “somewhat” were defined as exhibiting healthcare avoidance behavior (“Avoided”). 2. Regarding the

question, “Within the past 12 months, have you ever reduced your medication dosage or avoided visiting a hospital despite feeling that healthcare intervention was necessary for health issues associated with menstrual symptoms (including PMS and dysmenorrhea) or menopausal symptoms?”, those who chose “rarely” or “not at all” were defined as having no such behavior (“Not avoided”).

0.97–0.99). Additionally, individuals with lower income were half as likely to demonstrate healthcare avoidance behavior as compared to those with an annual income exceeding 10 million yen. Concerning work-related variables, those who perceived menstrual leave as being unfair, taking into account gender differences, were three-fourths as likely to exhibit healthcare avoidance behavior compared to those who deemed it fair (OR 0.75, 95% CI 0.60–0.95).

Regarding the history of menstrual and menopausal symptoms, individuals without menopausal symptoms were less than half as likely to engage in healthcare avoidance behavior compared to those with symptoms (OR 0.46, 95% CI 0.35–0.59). Moreover, individuals perceiving significant impacts from menstrual or menopausal health issues outside of work demonstrated a stronger tendency for healthcare avoidance behavior (OR 1.24, 95% CI 1.18–1.29). Furthermore, individuals without a diagnosis or treatment for gynecological diseases or conditions displayed less healthcare avoidance behavior than those with a history of diagnosis or treatment (OR 0.68, 95% CI 0.54–0.85).

Regarding general attitudes and understanding of women’s health, individuals who commonly relied on word-of-mouth from family, friends, and acquaintances when seeking healthcare were three-fourths as likely to exhibit healthcare avoidance behavior compared to those who didn’t (OR 0.73, 95% CI 0.57–0.94). Furthermore, those who did not consider enduring menstrual pain as necessary were two-thirds as likely to display healthcare avoidance behavior than those who thought it should be endured (OR 0.64, 95% CI 0.51–0.79).

Table 4 presents the results of a regression analysis focusing solely on employed individuals (n = 1,715). The findings largely mirrored those of the regression analysis conducted for all participants. Regarding health literacy, individuals who struggled to understand the rationale for health check-ups were one and a half times more inclined towards healthcare avoidance behavior compared to those who could easily comprehend these necessities (OR 1.47, 95% CI 1.07–2.01). With respect to general attitudes and understanding towards women’s health, individuals who did not harbor doubts or opinions about diagnoses or treatment plans explained by doctors during clinical visits showed less than half as likely to exhibit healthcare avoidance behavior compared to those who communicated their concerns or opinions to physicians (OR 0.45, 95% CI 0.29–0.68).

#### 4. Discussion

Utilizing online survey data from September 2022, we discovered that 22.8% of women, despite acknowledging health issues originating from menstrual or menopausal symptoms, had either reduced their medication dosage or avoided seeking healthcare. A separate research conducted in Japan indicated that within the cohort enduring the most severe menstrual symptoms, approximately 35.0% reported pursuing medical consultations with a gynecologist, while, among the subset of individuals confronted with heavy bleeding, roughly 32.1% reported clinical visits (Tanaka et al., 2013). This research assessed the impact of menstrual symptoms on Japanese women’s daily lives, highlighting the economic toll due to work productivity loss and emphasizing that many with severe symptoms don’t seek medical consultation, pointing to a need for better public awareness of available treatments (Tanaka et al., 2013). It is important to note that direct comparison between the two studies may not be appropriate due to potential differences in study designs and populations.

Upon analyzing factors associated with this healthcare avoidance behavior, we found that younger age was linked to a higher likelihood of engaging in healthcare avoidance. This aligns with other studies; age has

**Table 2**  
Sociodemographic characteristics of employed female respondents from a 2022 survey in Japan, stratified by healthcare avoidance behavior.

	Total (N = 1715)	Avoided <sup>1</sup> (N = 376, 21.9%)	Not avoided <sup>2</sup> (N = 1339, 78.1%)	P- value
<b>Age (mean, standard deviation)</b>	42.2 (9.4)	40.9 (9.1)	42.6 (9.4)	<0.01
<b>Marital status</b>				0.12
Married	901 (52.5)	185	716	
Not married	627 (36.6)	140	487	
Widowed / Divorced	187 (10.9)	51	136	
<b>Number of children</b>				0.93
0	877 (51.1)	197	680	
1	310 (18.1)	67	243	
2	379 (22.1)	79	300	
More than 3	149 (8.7)	33	116	
<b>Residence</b>				0.52
Within Tokyo Prefecture	245 (14.3)	58	187	
Prefectural capitals in prefectures other than Tokyo	547 (31.9)	124	423	
Cities outside of prefectural capitals	731 (42.6)	148	583	
Towns and villages	192 (11.2)	46	146	
<b>Highest educational level</b>				0.39
Middle school	31 (1.8)	6	25	
High school	491 (28.6)	97	394	
Junior college	542 (31.6)	115	427	
University	601 (35.0)	144	457	
Graduate school	50 (2.9)	14	36	
<b>Employment status</b>				0.08
Regular employees	763 (44.5)	183	580	
Part-time/temporary workers	628 (36.6)	119	509	
Dispatched/contracted employees	199 (11.6)	41	158	
Self-employed/Family employee/At-home worker	125 (7.3)	33	92	
<b>Occupation type</b>				0.01
Managerial position	42 (2.4)	13	29	
Self-employed/Family employee/At-home worker	37 (2.2)	8	29	
Professional/Technical position	347 (20.2)	101	246	
Administrative position	669 (39.0)	129	540	
Sales/Service industry	468 (27.3)	96	372	
Manufacturing/Factory worker	152 (8.9)	29	123	
<b>Number of employee</b>				0.82
More than 1000	331 (19.3)	75	256	
1–9	300 (17.5)	57	243	
10–29	221 (12.9)	51	170	
30–99	335 (19.5)	71	264	

(continued on next page)

Table 2 (continued)

	Total (N = 1715)	Avoided <sup>1</sup> (N = 376, 21.9%)	Not avoided <sup>2</sup> (N = 1339, 78.1%)	P- value
100–299	254 (14.8)	55	199	
300–999	219 (12.8)	53	166	
Government agency	55 (3.2)	14	41	
<b>Average daily working hours</b>				0.36
Equal to or exceeding 8 h	906 (52.8)	207	699	
Below 8 h	809 (47.2)	169	640	
<b>Average weekly working hours</b>				0.48
Equal to or exceeding 40 h	800 (46.6)	182	618	
Below 40 h	915 (53.4)	194	721	
<b>Tenure (mean)</b>	8.58	8.62	8.56	0.89
<b>Annual income in 2021 (million JPY)</b>				0.01
More than 10	29 (1.7)	14	15	
8–10	25 (1.5)	7	18	
6–8	57 (3.3)	11	46	
4–6	206 (12.0)	44	162	
2–4	518 (30.2)	130	388	
0–2	648 (37.8)	123	525	
0	24 (1.4)	5	19	
Don't know / Don't want to answer	208 (12.1)	42	166	

1: Regarding the question, “Within the past 12 months, have you ever reduced your medication dosage or avoided visiting a hospital despite feeling that healthcare intervention was necessary for health issues associated with menstrual symptoms (including PMS and dysmenorrhea) or menopausal symptoms?”, respondents who selected “yes” or “somewhat” were defined as exhibiting healthcare avoidance behavior (“Avoided”). 2: Regarding the question, “Within the past 12 months, have you ever reduced your medication dosage or avoided visiting a hospital despite feeling that healthcare intervention was necessary for health issues associated with menstrual symptoms (including PMS and dysmenorrhea) or menopausal symptoms?”, those who chose “rarely” or “not at all” were defined as having no such behavior (“Not avoided”).

been recognized as an influencing factor on healthcare-seeking behavior (Deeks et al., 2009). Literature suggests that younger age may possess inadequate knowledge about certain health conditions or may underestimate the severity of symptoms, leading to a tendency towards self-management (Schoemaker et al., 2022).

We also found that higher income earners had a higher likelihood of healthcare avoidance. This might seem counterintuitive, as higher income is usually linked with better access to healthcare (Castaldi et al., 2022). This finding is in line with a Norwegian study that documented diminished usage of general practitioners among women with higher income brackets (Hansen et al., 2012). One plausible explanation for this could be that individuals with higher incomes, benefiting from wider access to health information, may cultivate a sense of confidence in self-care or alternative health practices (Tang et al., 2019). In addition, high-income women may potentially have limited time for medical consultations due to their busy work schedules.

Women previously diagnosed or treated gynecologically showed more healthcare avoidance. This phenomenon could be attributed to

Table 3

Factors associated with healthcare avoidance behavior among all female respondents from a 2022 survey in Japan.

95% CI	P-value		
<b>Sociodemographic characteristics</b>			
Age (year)	0.98	0.97–0.99	<0.01
<b>Annual income in 2021 (million JPY)</b>			
More than 10	1	(Ref. group)	
8–10	0.39	0.11–1.37	0.14
6–8	0.45	0.16–1.25	0.13
4–6	0.37	0.16–0.89	0.03
2–4	0.52	0.22–1.18	0.12
1–2	0.37	0.16–0.84	0.02
0	0.53	0.23–1.22	0.13
Don't know / Don't want to answer	0.36	0.15–0.87	0.02
<b>Health literacy</b>			
<b>Understanding the reasons why health check-ups (breast examination, blood sugar test, blood pressure) are necessary is</b>			
Easy	1	(Ref. group)	
Difficult	1.23	0.97–1.57	0.09
Don't know	0.80	0.44–1.44	0.46
<b>Understanding the information written on food packaging is</b>			
Easy	1	(Ref. group)	
Difficult	1.11	0.87–1.41	0.39
Don't know	1.27	0.71–2.28	0.42
<b>Menstrual and menopausal symptoms</b>			
<b>Experience of menopausal symptoms</b>			
Yes	1	(Ref. group)	
No	0.46	0.35–0.59	<0.001
Don't know	1.24	1.18–1.29	<0.001
<b>In the past 3 months, to what extent have health problems caused by menstrual symptoms or menopausal symptoms affected various activities in your daily life other than work?<sup>1</sup></b>			
<b>Have you ever received treatment for or been diagnosed with any gynecological diseases or conditions? (Excluding medical consultations related to infertility treatment, pregnancy, and childbirth)</b>			
Yes	1	(Ref. group)	
No	0.68	0.54–0.85	<0.001
Don't know	0.64	0.40–1.02	0.06
Do you use OTC (over-the-counter) medications for health issues related to menstrual symptoms (including PMS and menstrual difficulties) or menopausal symptoms? <sup>2</sup>	1.01	0.99–1.04	0.32
<b>Attitudes and understanding of women's health</b>			
<b>Do you feel that paid menstrual leave is fair, considering gender differences?</b>			
Yes	1	(Ref. group)	
No	0.75	0.60–0.95	0.02
Don't know	0.76	0.55–1.04	0.09
<b>Information sources</b>			
Consultation desk for government agencies	1.25	0.69–2.27	0.46
Twitter	1.15	0.69–1.92	0.59
TikTok	1.82	0.66–5.04	0.25
Blogs by celebrities	1.66	0.67–4.12	0.27
Word-of-mouth from family, friends, and acquaintances	0.73	0.57–0.94	0.02
I have no specific information sources	0.78	0.60–1.01	0.06
<b>Menstrual pain is something to endure.</b>			
Agree	1	(Ref. group)	
Disagree	0.64	0.51–0.79	<0.001

(continued on next page)

**Table 3** (continued)

95% CI	P-value		
Don't know	0.92	0.48–1.75	0.80
<b>It is difficult to talk or consult about menstrual pain or taking menstrual leave at the workplace.</b>			
Agree	1		
	(Ref. group)		
Disagree	0.84	0.66–1.06	0.14
Don't know	0.66	0.4–1.08	0.10
<b>I am hesitant to visit a gynecologist or obstetrician myself</b>			
Agree	1		
	(Ref. group)		
Disagree	0.67	0.53–0.85	<0.01
Don't know	0.88	0.55–1.39	0.57

CI: confidence interval. 1: The impact of health issues arising from menstrual or menopausal symptoms on daily activities outside of work was assessed using an 11-point scale and analyzed as a continuous variable. 2: The number of days per month of over-the-counter (OTC) usage was analyzed as a continuous variable.

these women's elevated health literacy, providing broader health information access and understanding that fosters self-efficacy, thereby reducing their inclination to seek professional healthcare due to their confidence in managing conditions independently (Imamura et al., 2020). Another possibility is that these women, due to regular gynecological visits, might feel that they could address their symptoms during subsequent scheduled appointments, thus mitigating the perceived urgency for immediate medical consultation. A sensitivity analysis on women without any prior gynecological issues yielded broadly consistent results (data not shown).

Moreover, our study indicates that individuals experiencing severe menstrual or menopausal symptoms that disrupt daily activities beyond the work environment are also prone to healthcare avoidance. This behavior may be attributed to apprehension associated with discovering the severity of their health conditions. A review investigating the fears of chronic disease patients revealed a significant prevalence of clinical-level fears that notably affect quality of life; this overarching notion of health anxiety and the dread of symptom exacerbation could also pertain to behaviors seen in individuals experiencing severe menstrual or menopausal symptoms (Lebel et al., 2020).

Furthermore, people who believe they should endure menstrual pain were more likely to avoid healthcare. A previous study in the United States in 2015 found that many women consider menstrual pain to be “normal” and something that can be endured, believing there is no need to seek help from a gynecologist to alleviate symptoms (Chen et al., 2018). Such assumptions or misunderstandings may also exist among Japanese women (Tanaka et al., 2013).

In the context of information sources, our investigation indicates that individuals who predominantly depend on the anecdotal evidence provided by family, friends, and acquaintances when considering healthcare decisions exhibit less propensity towards healthcare avoidance relative to those who do not follow the same practice. Relying on the opinions of close people implies an opportunity to discuss and seek advice about healthcare visits (Pauli et al., 2023). This social support can alleviate anxiety and encourage proactive healthcare behaviors (Soare et al., 2022).

The variables regarding severe menstrual or menopausal symptoms that disrupt daily activities beyond work, and the belief that menstrual pain should be endured, were generally associated with employed women as well. In addition, women who found it difficult to understand the reasons for receiving health check-ups were more likely to avoid healthcare. This suggests that health literacy—understanding one's own health needs and the healthcare system—is crucial in promoting healthcare-seeking behaviors (Imamura et al., 2020).

**Table 4**

Factors associated with healthcare avoidance behavior among employed female respondents from a 2022 survey in Japan.

	Odds Ratio	95% CI	p-value
<b>Sociodemographic characteristics</b>			
<b>Age (mean)</b>	1.00	0.99–1.02	0.53
<b>Occupation type</b>			
Managerial position	1		
	(Ref. group)		
Self-employed/Family employee/At-home worker	0.40	0.13–1.26	0.12
Professional/Technical position	0.96	0.44–2.08	0.92
Administrative position	0.54	0.25–1.16	0.12
Sales/Service industry	0.62	0.28–1.33	0.22
Manufacturing/Factory worker	0.57	0.24–1.34	0.20
<b>Work environment</b>			
<b>Number of employee</b>			
More than 1000	1		
	(Ref. group)		
1–9	0.88	0.57–1.34	0.54
10–29	1.01	0.65–1.58	0.96
30–99	0.92	0.61–1.38	0.69
100–299	0.90	0.58–1.40	0.65
300–999	1.16	0.75–1.80	0.51
Government agency	0.85	0.40–1.80	0.68
<b>Health literacy</b>			
<b>Understanding how to deal with sudden illness is</b>			
Easy	1		
	(Ref. group)		
Difficult	0.99	0.69–1.43	0.95
Don't know	1.38	0.58–3.26	0.46
<b>Finding information on coping strategies for mental health issues such as stress or depression is</b>			
Easy	1		
	(Ref. group)		
Difficult	0.83	0.57–1.20	0.32
Don't know	0.51	0.21–1.28	0.15
<b>Understanding the reasons why health check-ups (breast examination, blood sugar test, blood pressure) are necessary is</b>			
Easy	1		
	(Ref. group)		
Difficult	1.47	1.07–2.01	0.02
Don't know	1.71	0.72–4.04	0.22
<b>Determining the reliability of health risk information obtained from media such as television, the internet, and other sources is</b>			
Easy	1		
	(Ref. group)		
Difficult	0.93	0.64–1.34	0.70
Don't know	0.72	0.29–1.76	0.47
<b>Making decisions about how to protect oneself from illness based on advice from family and friends is</b>			
Easy	1		
	(Ref. group)		
Difficult	1.02	0.74–1.42	0.88
Don't know	1.02	0.46–2.28	0.95
<b>Menstrual and menopausal symptoms</b>			
<b>In the past 3 months, to what extent have health problems caused by menstrual symptoms or menopausal symptoms affected various activities in your daily life other than work?<sup>1</sup></b>	1.27	1.20–1.34	<0.001
<b>Do you communicate your questions or opinions regarding the diagnosis or treatment plan to your doctor when receiving an explanation from them during hospital visits?</b>			
Yes	1		
	(Ref. group)		
No	1.09	0.82–1.44	0.55

(continued on next page)

Table 4 (continued)

	Odds Ratio	95% CI	p-value
Not applicable	0.45	0.29–0.68	<0.001
<b>Attitudes and understanding of women's health</b>			
<b>Do you feel that paid menstrual leave is fair, considering gender differences?</b>			
Yes	1 (Ref. group)		
No	0.66	0.49–0.88	<0.01
Don't know	0.60	0.40–0.91	0.01
<b>Information sources</b>			
Consultation desk for medical institutions	1.10	0.75–1.62	0.62
Consultation desk for government agencies	1.69	0.89–3.23	0.11
Instagram	1.00	0.49–2.02	0.99
Youtube	0.73	0.32–1.66	0.45
Facebook	1.48	0.51–4.34	0.47
Web page	1.19	0.79–1.78	0.40
<b>Menstrual pain is something to endure.</b>			
Agree	1 (Ref. group)		
Disagree	0.49	0.37–0.64	<0.001
Don't know	0.87	0.37–2.07	0.76
<b>It is embarrassing to talk to my partner about menstrual pain.</b>			
Agree	1 (Ref. group)		
Disagree	0.99	0.73–1.34	0.95
Don't know	1.58	0.85–2.94	0.15
<b>It is difficult to talk or consult about menstrual pain or taking menstrual leave at the workplace.</b>			
Agree	1 (Ref. group)		
Disagree	0.84	0.62–1.12	0.23
Don't know	0.42	0.17–1.01	0.05

CI: confidence interval. 1: The impact of health issues arising from menstrual or menopausal symptoms on daily activities outside of work was assessed using an 11-point scale and analyzed as a continuous variable.

## 5. Implications

This study highlights key factors influencing healthcare avoidance in Japanese women, particularly for menstrual and menopausal issues, with implications across societal, medical, and health literacy areas.

Health education, especially targeting younger women and higher-income demographics, may be beneficial. Misunderstandings or underestimations about menstrual disorders and menopausal symptoms could lead to self-management, especially among these demographic groups (Liddy et al., 2014). In addition, improving access to healthcare services offers potential benefits. For instance, establishing consultation windows during post-working hours or evenings for employed women, or promoting online consultations, may be advantageous. In Japan, employers are required to provide their regularly employed workers with a health examination annually. In workplaces employing 50 or more workers on a regular basis, employers are compelled to appoint an occupational physician to oversee and manage the health of their employees. Utilizing these regulations, information provision during health check-ups and promotion by occupational physicians can be enhanced.

Furthermore, the role of social support in promoting healthcare-seeking behavior should not be overlooked. An environment facilitating easy consultations with trusted individuals could effectively mitigate healthcare avoidance behavior. Within workplaces, enabling occupational physicians to address women's health issues could be beneficial in preventing healthcare avoidance. Addressing societal attitudes towards menstruation is important, as women who feel compelled to endure menstrual pain tend to avoid healthcare. Public health initiatives should refute such beliefs and stress menstrual pain as a health

issue to be medically managed.

Moreover, fostering health literacy is vital, as a lack of understanding about health check-ups emerged as a barrier to healthcare seeking. Strategies might include education about the importance of screenings even when in good health.

Lastly, research into the extent of healthcare avoidance among women remains limited; thus, further studies are essential to clarify the situation.

These implications, based on data interpretations, may not fully account for individual differences, but provide substantial insights into improving women's healthcare-seeking behavior in Japan.

## 6. Limitations

This study has several limitations. Primarily, the potential for self-selection bias, where survey participation might be skewed towards those with a pre-existing interest in the topic, could affect the representativeness of the study participants. However, in this study, the provision of "points" to respondents might have encouraged participation even among individuals who lacked intrinsic interest in the survey topic. Online data gathering could skew towards digitally proficient participants, affecting representativeness, especially among older people (Hargittai et al., 2019). While the quota sampling method ensured demographic representativeness, other demographic factors, such as socioeconomic status and education, could not be adjusted. In addition, medical intervention need was self-reported and may not align with medically necessary conditions, potentially underestimating or overestimating symptoms (Abreu-Sanchez et al., 2020). Lastly, due to the cross-sectional design of this study, it is not possible to establish causative relationships. Any associations detected should not be misinterpreted as indicating causality.

## 7. Conclusion

Age, income, prior gynecological experiences, attitudes towards menstrual pain, perceptions of menstrual leave, and levels of health literacy were all associated with this avoidance behavior. Younger age, higher income, and prior diagnoses were particularly associated with avoidance, highlighting the need for targeted education to dispel misconceptions and promote seeking medical consultations. Destigmatizing menstrual disorders, implementing menstrual education, workplace screenings, and improving access to consultations are imperative.

### Funding source

This work was supported by Bayer Yakuhin, LTD, and Fuji Pharma Co., Ltd. The funding sources had no role in the study design, data collection, data analysis, data interpretation or preparation of the manuscript.

### Ethics statement

Ethics approval was granted by the ethics committee of the Health Outcome Research Institute (authorization no. 2021-03). Respondents had to provide their consent before they proceeded to the questionnaire response page.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

Data will be made available on request.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2023.102467>.

## References

- Abreu-Sanchez, A., Parra-Fernandez, M.L., Onieva-Zafra, M.D., Fernandez-Martinez, E., 2020. Perception of Menstrual Normality and Abnormality in Spanish Female Nursing Students. *Int. J. Environ. Res. Public Health* 17.
- Academic Committee of the Korean Society of M, Lee, S.R., Cho, M.K., Cho, Y.J., Chun, S., Hong, S.H., 2020. The 202 Menopausal Hormone Therapy Guidelines. *J Menopausal Med.* (26), 69–98.
- Anderson, D.J., Yoshizawa, T., 2007. Cross-cultural comparisons of health-related quality of life in Australian and Japanese midlife women: the Australian and Japanese Midlife Women's Health Study. *Menopause* 14, 697–707.
- Borenstein, J.E., Dean, B.B., Endicott, J., Wong, J., Brown, C., Dickerson, V., et al., 2003. Health and economic impact of the premenstrual syndrome. *J. Reprod. Med.* 48, 515–524.
- Castaldi, M., Smiley, A., Kechejian, K., Butler, J., Latifi, R., 2022. Disparate access to breast cancer screening and treatment. *BMC Womens Health* 22, 249.
- Chen, C.X., Shieh, C., Draucker, C.B., Carpenter, J.S., 2018. Reasons women do not seek health care for dysmenorrhea. *J. Clin. Nurs.* 27, e301–e308.
- Corrigan, P.W., Rao, D., 2012. On the self-stigma of mental illness: stages, disclosure, and strategies for change. *Can. J. Psychiatry* 57, 464–469.
- Deeks, A., Lombard, C., Michelmore, J., Teede, H., 2009. The effects of gender and age on health related behaviors. *BMC Public Health* 9, 213.
- Friedman, J.H., Hastie, T., Tibshirani, R., 2010. Regularization Paths for Generalized Linear Models via Coordinate Descent. *J. Stat. Softw.* 33, 1–22.
- Goetzel RZ, Long SR, Ozminkowski RJ, Hawkins K, Wang S, Lynch W. Health, absence, disability, and presenteeism cost estimates of certain physical and mental health conditions affecting U.S. employers. *J Occup Environ Med.* 2004; 46:398-412.
- Hansen, A.H., Halvorsen, P.A., Ringberg, U., Forde, O.H., 2012. Socio-economic inequalities in health care utilisation in Norway: a population based cross-sectional survey. *BMC Health Serv. Res.* 12, 336.
- Hargittai, E., Piper, A.M., Morris, M., 2019. From internet access to internet skills: digital inequality among older adults. *Univ. Access Inf. Soc.* 18.
- Hoga, L., Rodolpho, J., Goncalves, B., Quirino, B., 2015. Women's experience of menopause: a systematic review of qualitative evidence. *JBIS Database System Rev. Implement. Rep.* 13, 250–337.
- Iacovides, S., Avidon, I., Baker, F.C., 2015. What we know about primary dysmenorrhea today: a critical review. *Hum. Reprod. Update* 21, 762–778.
- Imamura, Y., Kubota, K., Morisaki, N., Suzuki, S., Oyamada, M., Osuga, Y., 2020. Association of Women's Health Literacy and Work Productivity among Japanese Workers: A Web-based. Nationwide Survey. *JMA J.* 3, 232–239.
- Ju, H., Jones, M., Mishra, G.D., 2014. Premenstrual syndrome and dysmenorrhea: symptom trajectories over 13 years in young adults. *Maturitas* 78, 99–105.
- Lebel, S., Mutsaers, B., Tomei, C., Leclair, C.S., Jones, G., Petricone-Westwood, D., et al., 2020. Health anxiety and illness-related fears across diverse chronic illnesses: A systematic review on conceptualization, measurement, prevalence, course, and correlates. *PLoS One* 15, e0234124.
- Liddy, C., Blazkho, V., Mill, K., 2014. Challenges of self-management when living with multiple chronic conditions: systematic review of the qualitative literature. *Can. Fam. Physician* 60, 1123–1133.
- Maekawa M, Miyamoto A, Ariyoshi H, Miura K. A Survey of the Menstrual Status of Female College Students. *Healthcare (Basel).* 2023; 11.
- Murakami, H., Kanda, M., Nakajima, H., Sawayanagi, T., Soga, K., Hamada, N., et al., 2020. How can health and gender goals of the Sustainable Development Goals (SDGs) be pursued in synergy?: a comparative analysis between Japan and the United Kingdom. *Kokusai Hoken Iryo (Journal of International Health)*. 35, 49–64.
- Narumoto, K., Miyazaki, K., Inoue, M., Kaneko, M., Okada, T., Sugimura, M., 2022. Investigating women's health issues and help-seeking intentions in primary care in Japan: a cross-sectional study. *BMC Prim Care.* 23, 250.
- Pauli, G., Martin, S., Greiling, D., 2023. The current state of research of word-of-mouth in the health care sector. *International Review on Public and Nonprofit Marketing.* 20, 125–148.
- Robinson, R.L., Swindle, R.W., 2000. Premenstrual symptom severity: impact on social functioning and treatment-seeking behaviors. *J. Womens Health Gend. Based Med.* 9, 757–768.
- Schoemaker, C.G., van Geelen, S.M., Allewijn, M., Fernhout, M., van Vliet, R., Wulffraat, N., 2022. Self-management support for young people living with fluctuating chronic diseases. *Arch. Dis. Child.* 107, 658–659.
- Soare, T., Ianovici, C., Gheorghie, I.R., Purcarea, V.L., Soare, C.M., 2022. A word-of-mouth perspective on consumers of family medicine services: a case study. *J. Med. Life* 15, 655–660.
- Strine, T.W., Chapman, D.P., Ahluwalia, I.B., 2005. Menstrual-related problems and psychological distress among women in the United States. *J. Womens Health (Larchmt.)* 14, 316–323.
- Tanaka, E., Momoeda, M., Osuga, Y., Rossi, B., Nomoto, K., Hayakawa, M., et al., 2013. Burden of menstrual symptoms in Japanese women: results from a survey-based study. *J. Med. Econ.* 16, 1255–1266.
- Tanaka, E., Momoeda, M., Osuga, Y., Rossi, B., Nomoto, K., Hayakawa, M., et al., 2013. Burden of menstrual symptoms in Japanese women - an analysis of medical care-seeking behavior from a survey-based study. *Int. J. Womens Health* 6, 11–23.
- Tang, C., Wu, X., Chen, X., Pan, B., Yang, X., 2019. Examining income-related inequality in health literacy and health-information seeking among urban population in China. *BMC Public Health* 19, 221.
- Tay, J.K., Narasimhan, B., Hastie, T., 2023. Elastic Net Regularization Paths for All Generalized Linear Models. *J. Stat. Softw.* 106, 1–31.
- Tibshirani, R., 1996. Regression Shrinkage and Selection via the Lasso. *J. Roy. Stat. Soc.: Ser. B (Methodol.)* 58, 267–288.
- Treloar, S.A., Bell, T.A., Nagle, C.M., Purdie, D.M., Green, A.C., 2010. Early menstrual characteristics associated with subsequent diagnosis of endometriosis. *Am. J. Obstet. Gynecol.* 202 (534), e1–e6.
- Yoshino, O., Takahashi, N., Suzukamo, Y., 2022. Menstrual Symptoms, Health-Related Quality of Life, and Work Productivity in Japanese Women with Dysmenorrhea Receiving Different Treatments: Prospective Observational Study. *Adv. Ther.* 39, 2562–2577.