

Examining corporate support issues with health literacy as a key factor: The Case of a Hiroshima corporation

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ABSTRACT

Context: Given the dramatic decline in Japan's labor force, promoting women's participation in the workforce is essential. **Aims:** We aimed to take a Hiroshima company as an example and analyze the influencing factors of health literacy (HL) to clarify the issues of the active participation of female employees. **Methods and Materials:** From February to March 2023, a cross-sectional study was conducted by a company in Hiroshima prefecture that contained many male employees. A total of 1,114 valid respondents were received. Employees' demographics, menstrual-related concerns, women's activity promotion support, and HL were investigated in this study. **Statistical Analysis Used:** The Chi-square test and logistic regression using SPSS statistical software version 25 were used. **Results:** There were significant differences between high and low HL with age, women's menstrual problems, and women's activity promotion support. The participants who were unaware of women's menstrual-related problems and their company's implementation of women's activity promotion support were more likely to have high HL. In addition, female employees (including female management) and male management have significantly different cognitions about women's activity promotion support. **Conclusions:** This study found that overall HL among employees in male-dominated companies is low, even among participants who were aware of women's menstruation-related health issues and the company's women's activity promotion support. Increased women's representation in management can bridge policy perception gaps. Male-dominated companies should enhance HL via career programs, health education, and improved communication for active female engagement.

Keywords: Female employees, health literacy, menstruation, women's health

Introduction

Due to Japan's declining birth rate and aging population, the labor force has decreased dramatically.^[1] In response, the Japanese government has implemented a policy to promote women's participation in the labor force, emphasizing that removing

barriers to women's employment is critical to improving social equity and inclusive growth.^[2] However, the Japanese economy has been slow to recover from the impact of COVID-19, and the gender gap in the workplace has widened, which has had an enormous impact on Japanese working women.^[3] In this context, it is very urgent to pay attention to women's health, improve women's social status, and allow them to better participate in work.

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Compared to men, women face more barriers to employment and work in the workplace. They face lower employment rates but higher turnover rates.^[4,5] More women leave their jobs due to health reasons.^[6] The health reasons mainly regard women-specific menstrual-related problems or symptoms.^[7-9] Emotional and physical symptoms associated with the menstrual

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cycle can severely impact a woman's concentration and productivity, often leading to absenteeism.^[10-12] Likewise, decreased productivity has been associated with heavy menstrual bleeding.^[13,14]

One of the most debilitating symptoms associated with the menstrual cycle is dysmenorrhea (i.e., cramp-like pain that occurs before and/or during menstruation). It is usually accompanied by heavy menstrual bleeding. It has been reported that about 80% of women in Japan suffer from dysmenorrhea.^[15] Although the severity of dysmenorrhea varies from person to person,^[16] it remains one of the most critical health problems worldwide, as most young and adult women experience dysmenorrhea.^[17]

Another common problem affecting women is premenstrual syndrome (PMS).^[15] According to a survey, up to 25% of Japanese women of childbearing age suffer from PMS,^[13] and the way they cope with PMS mainly depends on their health literacy (HL) level, which in turn affects their work performance.

The World Health Organization defines HL as "cognitive and social skills that determine an individual's motivation and ability to acquire, understand, and use the information to promote and maintain physical health."^[18] A previous study has shown that comprehensive HL in Japan was lower than in Europe.^[19] Studies also have found that high HL can improve workers' health, while low HL can limit workers' understanding of occupational health and safety.^[20-22] Improving HL plays an important role in reducing employee health problems. By implementing healthy practices, companies can create a healthier work and living environment and further prevent employee turnover for health reasons.

Currently, research on HL among female workers in Japan is limited, both in comparison with Western countries and other research on HL in Japan.^[23-26] For this reason, this study aimed to take a Hiroshima company as an example and analyze the influencing factors of HL scores to clarify the issue of the active participation of female employees.

Subjects and Methods

Study design

A cross-sectional survey design was used in this study.

Survey instruments

This study investigated demographic characteristics (including gender, age, etc.),^[7,25,27-29] health and menstrual-related issues (such as Are you aware that women have a monthly menstrual cycle? [1: I know, 2: I have heard of it, 3: I do not know, 4: I have never heard of it]; Do you know that female hormones can cause irregular periods, menstrual cramps, and PMS? [1: I know, 2: I have heard of it, 3: I do not know, 4: I have never heard of it]),^[7,15,25] women's activity promotion support (Do you know the company action plan "Support for promoting women's active participation"? [1: I know, 2: I have heard of it, 3: I do not know, 4: I have never heard of it]).

There were also some questions for women only and management (such as What support do you need at your workplace? [K1: Advice and support from general affairs, human resources, etc.; K2: Communication within the department and with supervisors; K3: Support for work allocation and appropriate staffing; K4: Health education for prevention and awareness-raising in advance; K5: Support for balancing work and family life, such as a leave system for medical examinations, check-ups, and treatment, and flexible working arrangements, etc.; K6: Consultations with specialists such as industrial physicians, gynecologists, counselors, and advisors; K7: Career development programs that can be used regardless of life events such as illness, childbirth, and childcare, and age; K8: Support from health insurance unions and other insurers; K9: Manager training on health issues that are common among female employees and how to deal with them]; Had you been screened for cervical and breast cancer in the last two years? [1: Screened for breast and cervical cancer; 2: Only screened for cervical cancer; 3: Only screened for breast cancer; 4: Neither], etc.).^[30,31]

HL levels were measured by the Japanese version of the HL Questionnaire.^[32] Eight items were selected in this study, and each item was scored on a four-point Likert scale (4 = Quite Capable, 3 = Can, 2 = Cannot, 1 = Not at All), ranging from 8 to 32 points. The higher the score, the higher the HL. After calculation, the internal consistency of the scale used in this study was sufficient (Cronbach's $\alpha = 0.836$).

Sample and data collection

A manufacturer in Hiroshima Prefecture conducted a survey to promote women's empowerment. The analysis leveraged the data from the survey, with the intention of implementing measures to promote women's active participation. The company had a large number of male employees and was male-dominated. The company's products had the highest sales volume in Hiroshima Prefecture. The sample population was all employees of the Hiroshima company. The company had a total of 1,416 employees, of which 1,042 were male and 374 were female. The data collection period was from February 20 to March 10, 2023. This study was conducted using secondary data from a survey conducted to promote the active participation of women in the company in Hiroshima, Japan.

As part of the training aimed at promoting the active participation of female employees, a questionnaire was administered to all employees by the company. Responses were voluntary and did not include names. Responses were deemed consent to the survey. After a basic analysis was performed by healthcare personnel, the data were provided to Hiroshima University for detailed analysis with the consent of the administrator.

Analysis methods

HL greater than the mean score was defined as the high-scoring subgroup of HL and vice versa for the low-scoring subgroup.

First, Chi-square tests were used to compare and investigate differences in demographic characteristics, menstrual-related problems, and HL between high and low HL. Then, logistic regression analysis was performed with the factors of the Chi-square tests and gender as independent variables and the HL scores of the two groups as dependent variables. Finally, we briefly tabulated the content of workplace support for general female employees and female and male management to examine whether there are differences between positions and to summarize specific improvements needed to promote the success of female employees. For data analysis, the statistical software SPSS (version 25, IBM) was used. The results of logistic regression were presented as odds ratios (ORs) and 95% confidence intervals (CIs). A *P* value <.05 was considered statistically significant.

Ethical approval

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Hiroshima University Epidemiology Ethics Committee as an epidemiological study (NO. E2023-0102).

Results

Demographic characteristics

In this study, a total of 1,122 (79.2%) questionnaires were collected; excluding eight people who submitted questionnaires but did not answer, the analysis population of this study was

1,114 (78.7%), including 817 men (73.3%), 297 women (26.7%), 152 (13.6%) in their 20s, 138 (12.4%) in their 30s, 269 (24.1%) in their 40s, and 555 (49.8%) in their 50s or older.

HL scored points (17.36 ± 3.07). In the low HL group, the number was 686 (61.6%); in the high HL group, the number was 428 (38.4%).

Chi-square test results show significant differences between the high and low HL groups in terms of age (*P* = .002), whether they knew that female hormones could cause irregular menstruation, dysmenorrhea, and PMS (*P* = .011), whether they knew that the company supports women’s health promotion programs (*P* < .001). However, there were no significant differences in terms of gender (*P* = .988), or whether they were aware that women have a monthly menstrual cycle (*P* = .139) [Table 1].

Association of HL with age, menstrual-related problems, and women’s activity promotion support

HL increased with age for participants in their 30s (OR = 1.89, 95% CI: 1.149-3.108) and 40s (OR = 2.35, 95% CI: 1.521-3.635) compared to those in their 20s and below, but then decreased for participants in their 50s or older (OR = 1.68, 95% CI: 1.124-2.510).

Those participants who were unaware that female hormones cause menstrual irregularities, dysmenorrhea, and PMS were more likely to have high HL (OR = 0.71, 95% CI: 0.516-0.986).

Table 1: Demographic characteristics (n=1,114)

Variables	Total	HL		P
		Low-Score 686 (61.6%)	High-Score 428 (38.4%)	
Gender				0.988
Male	817	503 (61.6%)	314 (38.4%)	
Female	297	183 (61.6%)	114 (38.4%)	
Age				0.002
20s	152	111 (73.0%)	41 (27.0%)	
30s	138	81 (58.7%)	57 (41.3%)	
40s	269	146 (54.3%)	123 (45.7%)	
50s or older	555	348 (62.7%)	207 (37.3%)	
Are you aware that women have a monthly menstrual cycle?				0.139
I know	1,064	663 (62.3%)	401 (37.7%)	
I have heard of it	39	18 (46.2%)	21 (53.9%)	
I do not know	6	3 (50.0%)	3 (50.0%)	
I have never heard of it	5	2 (40.0%)	3 (60.0%)	
Do you know that female hormones can cause irregular periods, menstrual cramps, and PMS?				0.011
I know	920	582 (63.3%)	338 (36.7%)	
I have heard of it	167	94 (56.3%)	73 (43.7%)	
I do not know	24	8 (33.3%)	16 (66.7%)	
I have never heard of it	3	2 (66.7%)	1 (33.3%)	
Do you know the company action plan “Support for promoting women’s active participation”?				<0.001
I know	348	245 (70.4%)	103 (29.6%)	
I have heard of it	331	209 (63.1%)	122 (36.9%)	
I do not know	417	222 (53.2%)	195 (46.8%)	
I have never heard of it	18	10 (55.6%)	8 (44.4%)	

Those participants who were unaware of women’s activity promotion support were more likely to have high HL (OR = 0.59, 95% CI: 0.444-0.776) [Table 2].

Differences in perceptions of women’s activity promotion support by management and female employees

The following graph [Figure 1] demonstrates the differences in perceptions of women’s activity promotion support by management and female employees.

There are 297 female employees, including 244 (82.2%) general female employees (GFE) and 53 (17.8%) female managers (FM). There are 349 management personnel, including 296 (84.8%) male managers (MM) and 53 (15.2%) FM.

Regarding internal support, the support from three perspectives of general female employees, female management, and male management, respectively, were K1 (19, 8, 114), K3 (56, 11, 166), K5 (117, 24, 57), K6 (43, 19, 150), and K8 (19, 13, 49).

The desired content of support from the perspective of general female employees and female management, respectively, were K2 (43, 8), K4 (48, 14), and K7 (36, 8). The common support content by female and male management, respectively, was K9 (20, 78).

The symbols of their interests are indicated by circles. The number of respondents is indicated in a straight line. The color of the line connecting the concern numbers is yellow for GFE, red for FM, and blue for MM. In terms of options, the color is green for concerns that are common to all three positions, blue for concerns that are common to GFE and

FM, and gray for concerns that are common to FM and MM [Figure 1].

Discussion

In this survey of a male-dominated company in Hiroshima, we observed that HL was significantly associated with age, menstrual-related problems, and women’s activity promotion support. Based on this finding, we proposed some policy recommendations to improve HL.

Table 2: Association of HL with age, menstrual-related problems, and women’s activity promotion support (n=1,114)

Variables	OR	95% CI	P
Gender			
Male	Ref.	-	-
Female	0.981	0.738-1.304	0.893
Age			
20s	Ref.	-	-
30s	1.89	1.149-3.108	0.012
40s	2.35	1.521-3.635	<0.001
50s or older	1.68	1.124-2.510	0.011
Do you know that female hormones can cause irregular periods, menstrual cramps, and PMS?			
No	Ref.	-	-
Yes	0.71	0.516-0.986	0.041
Do you know the company action plan “Support for promoting women’s active participation”?			
No	Ref.	-	-
Yes	0.59	0.444-0.776	<0.001

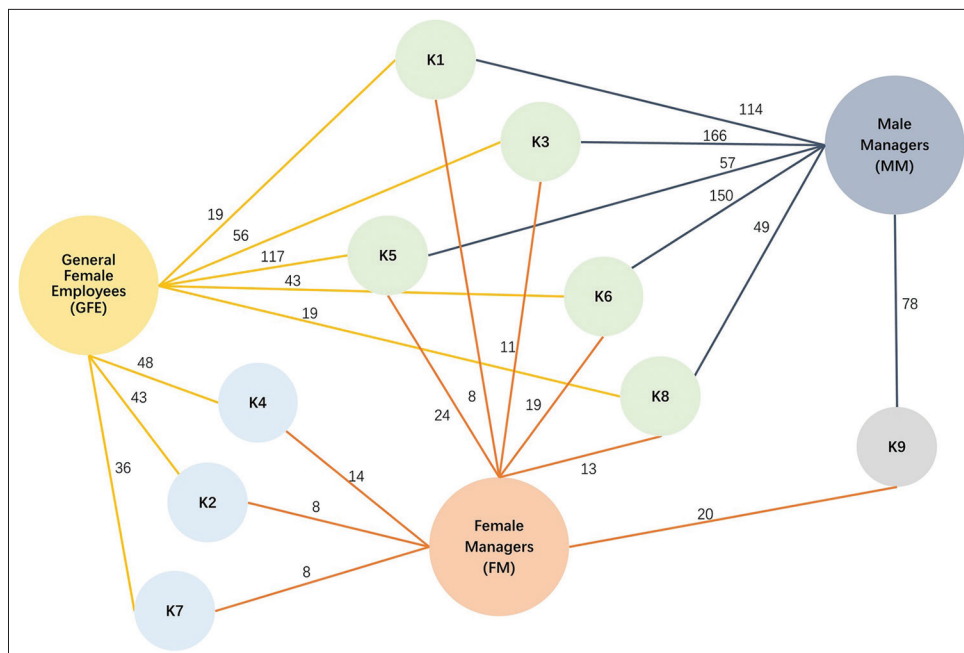


Figure 1: General female employees and management’s (female and male) concerns about women’s health issues (n = 1,114)

Relationship between HL and age

Our study found a significant relationship between HL and age, which is consistent with previous study.^[33] Our study also found that people's HL increases with age but decreases when they reach a specific age range. The Health Literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy revealed that the level of HL among adults began to decline significantly at age 55 years.^[34] Other studies also show that HL and age are not simple linear relationships and may be disturbed by education, income, and other factors.^[35-38] As people age, their ability to access, understand, and use health information increases, as do their social skills and experience. But, by a specific age range, the accumulation of experience reaches its peak, and the tendency for cognitive and learning abilities to decline is more pronounced. This finding was also supported in this study. In particular, young people can now access all kinds of health information through multiple channels, such as the Internet, which to some extent offsets their lack of experience.

Relationship between HL and menstrual-related problems

Our study found a significant relationship between HL and knowledge that female hormones cause irregular periods, dysmenorrhea, and PMS, and those participants who were unaware that female hormones cause irregular periods, dysmenorrhea, and PMS were more likely to be in the high HL group. Previous studies mainly focusing on women have shown that the high HL group had significantly higher ORs than the low HL group in terms of menstrual-related health behaviors.^[25] However, our study, which used data that was conducted on all male and female employees of a company, is different from previous studies. The ratio of male to female respondents in the target population of this study is 2.75:1, with the majority of respondents being male. This finding may reflect the perceptions of male employees.

A possible explanation is that female employees cannot freely talk about issues related to the menstrual cycle with management and naturally cannot obtain support from management,^[7,15] especially in companies dominated by male management. Therefore, this study shows that HL needs to be improved by addressing women's inherent health risks such as dysmenorrhea and PMS.

Association of HL with women's activity promotion support

Our study found a significant relationship between HL and awareness of women's health. Previous studies have shown that HL can be enhanced through the provision of information, effective communication, and structured education.^[39,40] However, our study found that participants with high HL had less knowledge about women's health than those with low HL. Generally, participants with high HL make relatively independent health and medical judgments based on their own experience (including education experience, health experience, etc.) and knowledge. They are more confident in their ability

to obtain better information to address health issues through various avenues rather than relying on company policies. While the opposite may be true for the low-HL group. However, women's health is of less interest to the high-HL group. The necessities of similar women's health policies may be lower than the expectations of the high-HL group, such that they think it is unnecessary (or less important) to pay attention to the policies. Therefore, companies should increase their publicity of the women's activity promotion support and improve its effectiveness.

Improving HL

Our results show significant differences in perceptions of women's activity promotion support by female employees and management in companies dominated by male management. Although our findings did not show significant gender differences in HL, there may be physical and sociocultural differences in men's and women's health.^[41,42] However, HL may not address physical and social aspects of gender. Individual behaviors in accessing, using, and seeking help and healthcare often differ by gender.^[43] In addition, from the perspective of corporate governance, company management tends to focus on the interests of all company employees rather than those of the general workforce.^[44-47] In this case, male management dominated the formulation of company policies, and the proportion of women participating in management was low, with little involvement and relatively little influence on company decisions.

Of course, it is necessary for managers to understand HL, which includes the correspondence of female employees' needs. On the other hand, female managers can understand the health issues of female employees and can reflect and promote women's health issues as women's representatives in management. Encouraging more women to join management may help improve the gap between female employees and management quickly and can contribute to advancing gender equality (SDG 5), health and well-being (SDG 3), sustainable urban and community development (SDG 11), economic growth (SDG 8), and other sustainable development goals by the company.^[48]

In addition, to narrow down the difference in perception of women's active promotion support between female employees and management, we argue that in companies with a large number of male employees, HL should be enhanced, including the correspondence needs of female employees. Companies should pay more attention to and listen to the health aspirations of female employees, including PMS training and related education for staff and resources to help individuals cope with PMS at work and interact with healthcare providers from a shared responsibility perspective. Specifically, it is considered necessary to (i) increase opportunities for communication with supervisors, (ii) support career development programs for women, and (iii) provide health education for all employees, including issues specific to women. In this process, female managers should be actively involved and play the role of communication link between female employees and management.

Limitations

This survey was a cross-sectional study, so we could not determine the causal relationship between HL and related factors. Longitudinal studies are needed to examine the association between factors such as sociodemographic characteristics and HL and to consider the specific impact of corporate women's activity promotion support on HL.

In addition, a questionnaire survey by the company in Hiroshima Prefecture that is engaged in support aimed at promoting the active participation of female employees was used as secondary. The question items are limited and more about women's health issues and the possibility of selection bias exist. The homogeneity of the participants may have influenced the observed differences in the degree of HL, and further studies are needed to explore the generalizability of our findings.

Conclusion

This study found that overall HL among employees in male-dominated companies was low. The male-centric bias and lack of understanding of company policies resulted in low HL levels, even among participants who were aware of women's menstruation-related health issues and the company's women's activity promotion support. This study also found that more women in management can help to balance the differences in policy perceptions between female support and male management.

Therefore, male-dominated companies should actively improve the employees' HL by implementing career development programs that support women, providing health education to all employees and increasing opportunities for employees to communicate with the company to promote active female participation better.

Key points

1. Age, women's menstrual-related issues, and women's activity promotion support were associated with employees' HL.
2. The participants who were unaware of women's menstrual-related problems and their company's implementation of women's activity promotion support were more likely to have high HL.
3. Female employees (including female management) and male management have significantly different cognitions about women's activity promotion support.

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Informed consent statement

This research was approved by the health management department of the surveyed company. Employees were also informed that the collected data would be used for research.

Data availability statement

Due to issues related to personal privacy and moral and ethical issues, the data of this study are not openly accessible to the public.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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