

Job stress and risk of menstrual duration disorder in female civilian flight attendants in Indonesia

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Abstrak

Latar belakang: Gangguan durasi haid pada pramugari dapat mengganggu performa kerja. Tujuan penelitian adalah untuk mengetahui faktor-faktor risiko yang terhadap gangguan durasi haid pada pramugari.

Metode: Penelitian potong lintang dengan sampling purposif dilakukan pada pramugari berusia 19–50 tahun yang melakukan pemeriksaan kesehatan berkala di Balai Kesehatan Penerbangan dan Garuda Sentra Medika tanggal 18–29 Mei 2015. Gangguan durasi haid ialah durasi haid lebih dari 8 hari dan/atau lebih pendek dari biasa (3–5 hari). Stres diidentifikasi dengan kriteria National Institute for Occupational Safety and Health Generic Job Stress Questionnaire Mental Demands Form Number 11. Analisis dilakukan dengan regresi Cox.

Hasil: Di antara 521 pramugari sebanyak 393 setuju berpartisipasi, 19 dieksklusi karena menderita gangguan durasi haid sebelum bekerja, sehingga diperoleh 374 subyek untuk analisis, dan 35,8% di antaranya menderita gangguan durasi haid. Stres kerja, jenis penerbangan dan usia merupakan faktor risiko dominan terhadap gangguan durasi haid. Pramugari dengan stres kerja memiliki risiko menderita gangguan durasi haid 58% lebih tinggi [risiko relatif suaian (RRa) = 1,58; interval kepercayaan (CI) = 0,96-2,62; P = 0,071]. Pramugari dengan jenis penerbangan jarak jauh dalam tiga bulan terakhir memiliki risiko 69% lebih tinggi mengalami gangguan durasi haid (RRa=1,69; CI=1,17-2,43). Pramugari berumur 30–39 tahun memiliki risiko gangguan durasi haid 50% lebih rendah (RRa = 0,50; 95% CI = 0,22-1,02; P = 0,057).

Kesimpulan: Pramugari dengan stres kerja, jenis penerbangan jarak jauh dalam tiga bulan terakhir, dan berusia 19–24 tahun memiliki risiko lebih tinggi gangguan durasi haid. (*Health Science Journal of Indonesia 2015;6:87-91*)

Kata kunci: durasi haid, stres kerja, pramugari, Indonesia

Abstract

Background: Menstrual duration disorder may cause impaired work performance. The research objective was to identify risk factors related to menstrual duration disorder in female flight attendants.

Methods: A cross-sectional study with convenient sampling was conducted on civilian female flight attendants age 19–50 years who underwent routine medical examination at Civil Aviation Medical Center and Garuda Sentra Medika, Jakarta on May 18-29 2015. Menstrual duration disorder is menstruation more than 8 days and/or shorter than usual period (3-5 days). Stress was identified by using criteria of National Institute for Occupational Safety and Health Generic Job Stress Questionnaire Mental Demands Form Number 11. Relative risk was analyzed using Cox regression.

Results: Among 521 female civilian flight attendants, 393 were willing to participate in this study. Nineteen subjects were excluded, leaving 374 subjects for this analysis, and 35.8% of subjects had menstrual duration disorder. Job stress, flight type and age were dominant risk factors for menstrual duration disorder. Subjects with job stress and long haul flight within three months had higher risk for having menstrual duration disorder by 58% [adjusted relative risk (RRa) = 1.58; confidence interval (CI) = 0.96-2.62; P = 0.071] and 69% (RRa = 1.69; CI = 1.17-2.43) respectively. Those between aged 30-39 years had 50% had less risk of having menstrual duration disorder (RRa=0.50; 95% CI = 0.22-1.02; P = 0.057).

Conclusion: Female civilian flight attendants with job stress, long haul flight within three months and younger age had higher risk to be menstrual duration disorder. (*Health Science Journal of Indonesia 2015;6:87-91*)

Key words: menstrual duration, job stress, female civilian flight attendant, Indonesia

Female flight attendant is one of the profession that requires optimal health in order to maintain the safety of flight.¹ Female flight attendants often encounters health problems due to the environment. The problem, among other others, on reproductive disorders such as menstrual duration disorder. This problem may encounter the performance the female flight attendants in doing their job, which could compromise the flight safety.²

Previous studies showed that several risk factors (age, habits, job stress, occupational, flight hours) related to menstrual duration disorder among flight attendants.³ Female flight attendants have higher risk for having menstrual disorder compared to other non-flight attendant females and female ground crews.⁴ Furthermore, female flight attendants have more job stress than non-flight attendants.² The job stress, among others, influences menstrual duration disorder in female civilian flight attendants.⁵

In Indonesia, the study of several risk factors related to menstrual duration disorder is still rare. The study aimed to identify job stress and several other risk factors related to menstrual duration disorder among female flight attendants.

METHODS

The subjects of this purposively cross-sectional study consisted of female civilian flight attendants age 19–50 years who conducted routine medical examinations in Indonesian Aviation Medical Center in Jakarta and Garuda Sentra Medika in May 18-29, 2015.

Menstrual duration disorder defined as duration of menstruation more than 8 days and/or shorter than usual period (3-5 days).

Job stress was measured using the National Institute for Occupational Safety and Health (NIOSH) Generic Job Stress Questionnaire Mental Demands Form Number 11. The questionnaire has good validity and reliability (*interval consistency* - Cronbach's alpha 0.61).⁶

The questionnaire consisted of 5 questions: (1) My job requires a great deal of concentration; (2) My job requires me to remember many different things; (3) I must keep my mind on my work at all times; (4) I can take it easy and still get my work done.; (5) I can let my mind wander and still do the work.

The answer in the form of a Likert scale with four choices: strongly agree, slightly agree, slightly disagree dan strongly disagree. Each answer was

given a score of 1-4 by the researchers according to the female flight attendant answers.

Number 1 for the lowest score and number 4 for the highest score.

The score assessment inverted to question numbers 1-3, and then carried out a summation of the whole score. The lowest score at 5 and a highest of 20. The higher the score, the more likely a flight attendant job stress.

For this analysis we used the cut-off point for job stress that identified based on Receiver Operating Characteristics Curve (ROC) analysis. The results are: 0 =without job stress (total score 12 or less); 1 = with job stress (total score 13 or more)

The demographic, occupation, habit characteristics, job stress and menstrual duration disorder data were collected based on interview using a questionnaire for this study. Height and weight data was obtained from the medical records.

For this study, occupational risk factors were categorized: the most frequent flight type since last week, last three months, and last year (short haul was 2 hours or less, intermediate haul was 2 – 6 hours, and long haul was 6 hours or more); rating type (Boeing, Airbus, ATR and others); total flight hours within three months (21–225 hours and 226– 500 hours).

Age was categorized into 4 categories: 19 – 24 years, 25 – 29 years, 30 – 39 years and 40 – 50 years. Smoking was categorized into 3 categories: never smoke, was smoking and currently smoking.

Body mass index (BMI), for this study BMI based on WHO categorition, and we re-categorized into 2 categories: normal and overweight/obese. For Asia race: Normal = 18.5 – 22.9 kg/m²; overweight = 23.0 – 24.9 kg/m² or more. While for Caucasian race: Normal = 18.5 – 24.9 kg/m²; overweight = 25.0 kg/m² or more.

Flight type categorized as 1 = short haul; 2 = intermediate haul; and 3 = long haul. Short haul if one flight sector less than 2 hours; intermediate haul when the flight for one sector is 2 to 6 hours; long haul for the flight in one sector more than 6 hours.

The analysis in this study used Cox regression with constant time.⁷ Data were analyzed using STATA version 9.

Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Indonesia, Jakarta. This study was conducted upon approval the Chief of Civil

Aviation Medical Center, Directorate General of Civil Aviation, Jakarta and Chief of Garuda Sentra Medika.

RESULTS

Among the 521 female civilian flight attendants who underwent routine medical examination, 393 subjects agreed to join the study. We excluded 19 subjects who ever had menstrual duration disorder before being employed. Therefore, leaving 374 subjects included for this analysis. None of the included subjects was obese

Table 1 showed that 35.8% (134/374) subjects had menstrual duration disorder. Subjects with or without menstrual duration disorder were similarly distributed in terms of body mass index and smoking

habit, total flight hours within three months, rating type and flight type since last week and last year.

Table 2, our final model, showed that three dominant risk factors (job stress, flight type since last three months and age) related to menstrual duration disorder. Subjects who had job stress had 58% higher risk for having menstrual duration disorder [adjusted relative risk (RRa) = 1.58; P = 0.071].

In term of long haul flight within three months, those who long haul flight within three months compared to short haul flight had 69% higher risk for having menstrual duration disorder (RRa=1.69; P = 0.004).

Furthermore, subjects aged 30-39 years compared to 19-24 years had 50% less risk of having menstrual duration disorder (RRa = 0.50; P = 0.057).

Table 1. Smoking habit, body mass index, occupation, flight and risk of menstrual duration disorder

	Menstrual duration disorder				Crude relative risk	95% confidence interval	p
	Normal (n = 240)		Disorder (n = 134)				
	n	%	n	%			
Smoking habit							
Never	197	63.5	113	36.5	1.00	Reference	
Ever	21	77.8	6	22.2	0.68	0.31-1.47	0.333
Current	22	59.5	15	40.5	1.11	0.64-1.90	0.699
Body mass index							
Normal	181	63.1	106	36.9	1.00	Reference	
Overweight	59	67.8	28	32.2	0.87	0.57-1.32	0.517
Flight hours within three months							
21-225 hours	180	63.6	103	36.4	1.00	Reference	
226-500 hours	60	65.9	31	34.1	0.93	0.62-1.39	0.747
Flight type since last week							
Short haul	127	65.1	68	34.9	1.00	Reference	
Intermediate haul	88	65.7	46	34.3	0.98	0.67-1.43	0.934
Long haul	25	55.6	20	44.4	1.27	0.77-2.09	0.340
Flight type since last year							
Short haul	89	65.4	47	34.6	1.00	Reference	
Intermediate haul	117	65.0	63	35.0	1.01	0.69-1.47	0.948
Long haul	32	57.1	24	42.9	1.24	0.75-2.02	0.391
Rating type							
Boeing	191	63.2	111	36.8	1.00	Reference	
Airbus	40	70.2	17	29.8	0.81	0.48-1.35	0.422
Avions de transport regional	7	58.3	5	41.7	1.13	0.46-2.77	0.784
Others	2	66.7	1	33.3	0.90	0.12-6.49	0.923

Table 2. Relationship among job stress, flight type for the last three months, age and risk of menstrual duration disorder

	Menstrual duration disorder				Adjusted relative risk*	95% confidence interval	p
	Normal (n = 240)		Disorder (n = 134)				
	n	%	n	%			
Job stress							
Without job stress	42	76.4	13	23.6	1.00	Reference	
With job stress	198	62.1	121	37.9	1.58	0.96-2.62	0.071
Flight type since last three months							
Short haul	105	68.6	48	31.4	1.00	Reference	
Intermediate haul	113	64.6	62	35.4	1.09	0.80-1.47	0.579
Long haul	22	47.8	24	52.2	1.69	1.17-2.43	0.004
Age							
19 – 24 years	161	63.6	92	36.4	1.00	Reference	
25 – 29 years	48	59.3	33	40.7	1.13	0.80-1.49	0.562
30 – 39 years	23	82.1	5	17.9	0.50	0.22-1.02	0.057
40 – 50 years	8	66.7	4	33.3	0.89	0.38-1.90	0.698

*Adjusted each other among risk factors listed on this table

DISCUSSION

This study had several limitations, among others, this study was conducted among limited and with purposive selected civilian flight attendants. The selected samples did not represent the general civilian flight attendants. Furthermore, there were some misinterpretation by the subjects while answering the questions listed in the questionnaire. Even though, we explained the questionnaire before the interview.

In this study, we noted that female civilian flight attendants with job stress had higher risk for having menstrual duration disorder. This result is similar with the previous study of menstrual duration disorder in female civilian flight attendants in Indonesia.⁸ Job stress in female civilian flight attendants stimulates the secretion of CRH (corticotropin releasing hormone) and will suppress GnRH (gonadotropin-releasing hormone) in hypothalamus that releases (adrenocorticotrophic hormone (ACTH) which stimulates the production of glucocorticoid hormones. Glucocorticoid hormones (cortisol, adrenaline and androgen) inhibits GnRH, follicle stimulating hormone (FSH)–luteinizing hormone (LH) and ovary, causing follicular atresia, thus lowering the estrogen level and will result in menstrual disorder.⁹

Furthermore, in this study we also noted that female civilian flight attendants with long haul

flight within three months compared to short haul flight had 69% statistically significant higher risk of having menstrual duration disorder. This result was different with a previous study that reported that female flight attendants who had 8 hours or more compared to those who had less than 8 hours flight had more risk (but not statistically significant) had menstrual disorder.² The difference might be due to the grouping of hours, which is more than 6 hours in this study, and limited to the last three months.

Menstrual disorder related to sleep cycle may be disturbed by jet lag caused by long haul flight or shift lag in the working environment. This will cause hypothalamo-pituitary-ovarian axis dysfunction, which are also related to stress and the secretion of LH. Sleep directly inhibits LH secretion, thus lowering the LH level on the early follicular phase and affects the menstrual pattern.¹⁰

Our study noted that compared with the female civilian flight attendants aged 19–24 years, female civilian flight attendants aged 30–39 years had 50% less risk for having menstrual duration disorder.

The adaptation process within working environment between 30–39 years subjects might be better than the 19–24 years old.¹¹ In addition, aging process that starts at 40 years affects the ovary's ability to react to the stimulation of gonadotropin hormones.²

In conclusion, female civilian flight attendants with job stress, long haul flight within three months and compared with the female civilian flight attendants aged 19–24 years, those who had age 30–39 years had 50% less risk for having menstrual duration disorder.

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