Menstrual problems and health-seeking behaviour in Hong Kong Chinese girls

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Objective   To ascertain the prevalence of menstrual problems in adolescent girls and their health-seeking behaviour.

Design   Questionnaire survey on menstruation, menstrual problems, medical consultation, and factors influencing girls seeking medical care.

Setting   Secondary schools in the catchment area of a tertiary teaching hospital in Hong Kong.

Participants   A total of 5609 girls from 10 secondary schools.

Main outcome measures   Prevalence of menstrual problems and health-seeking behaviour of adolescent girls.

Results   The mean age of the girls and their mean age at menarche were 15.1 (standard deviation, 2.0) years and 12.3 (1.1) years, respectively. The prevalence of menorrhagia, dysmenorrhoea, and menstrual symptoms were 17.9% (95% confidence interval, 16.9-19.1%), 68.7% (67.7-70.3%), and 37.7% (36.7-39.3%), respectively. The prevalence of menstrual symptoms (P<0.001) and dysmenorrhoea (P<0.001) increased with gynaecological age (calendar age minus age at menarche), whilst the proportion having short or long cycles decreased (P=0.002 and P=0.009). One in eight girls reported having been absent from school, whilst only 6.4% had sought medical care because of menses. Multivariate analysis indicated that seeking medical care for menorrhagia was dependent on the opinion of a family member (P=0.005), and for dysmenorrhoea on its severity (P=0.046) and anxiety about embarrassing questions (P=0.039).

Conclusions   The prevalence of menstrual problems in Hong Kong Chinese girls is high and causes significant disruption to their school and daily activities. However, only a minority seek medical advice.

Introduction

Menarche is a normal female biological milestone and abnormalities of menstruation are a major gynaecological problem in adolescence. Menstrual disorders include menstrual irregularity, menorrhagia, dysmenorrhoea, and other related symptoms. Among these, dysmenorrhoea is the most common, being reported in 60 to 90% of adolescents, and a frequent cause of absenteeism from school or restriction of daily activity.[1-6] Menstrual irregularity was reported in 43 to 62% of girls during the first year of menstruation and in some it persists for 3 to 5 years.[1,2,4,7] These data are mainly derived from western populations however; information about menstrual problems and their impact regarding Chinese adolescents is limited and largely unknown. Moreover, cultural beliefs may affect attitudes towards menstruation,[8] which in turn may influence the views of adolescents.

In many communities, adolescents tend to underutilise health care services, and a similar situation has been reported in Hong Kong,[9-11] which may have a significant impact on the physical and social health of those affected. By contrast, there is little knowledge on adolescents' health-seeking behaviour in regard to menstrual problems. Availability of such information could be important for the development of appropriate health care services. The objective of this study was to ascertain the prevalence of menstrual problems in Hong Kong Chinese girls and their health-seeking behaviour.

Methods

Secondary schools within the hospital catchment area were invited to join the study. Each

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school was sent written information regarding its specific aims and asked for consent to allow female students in Forms 1 to 7 of their respective institutions to be approached to participate. Schools which did not respond to the initial approach were reminded again after 2 months and those not responding to the second approach were considered to have declined participation in the study. In schools that agreed to participate, all girls were invited to complete an anonymous, self-administered, structured 33-item Chinese questionnaire conducted within a classroom setting and overseen by the study research coordinator. Girls were asked about personal demographic details, age of menarche in years and months, current menstrual status and menstrual cycle length in days, and whether they experienced any menstrual problems and, if so, their severity. They were also asked to indicate whether they had sought medical advice or treatment for their menstrual problems in the prior 12 months. They were also asked to provide reasons why they would not seek medical advice or treatment if it was required. The impact of menstrual disorder on daily activities (eg avoidance of physical exercise or outdoor activity) and the number of days absent from school were also addressed. Each participating student was given general information and an instruction sheet before answering the questions, as well as specific instructions on how to determine menstrual cycle length.

Male unisex schools and international schools in which the majority of students were not Chinese were excluded from the study. The reported prevalence of menstrual problems in adolescents was 40 to 90%.[1-7] Therefore, assuming a prevalence of 50% or lower in our locality, it was estimated that a sample size of 2350 was needed to determine the prevalence with a precision of 2% and a suitable 95% confidence interval. A further 30% above the estimated required sample size was recruited to allow for students not consenting to participate. Assuming an average of 400 girls in each school and 50% participation, 20 schools were approached. The study was approved by the Research Ethics Committee of the Chinese University of Hong Kong.

Statistical analyses

Descriptive statistics were used to characterise the study population. Differences in proportions were analysed using the Chi squared test with the Yates correction where appropriate. Chi squared tests for trends were used to study the association between the prevalence of menstrual problems and the gynaecological year (calendar age minus age at menarche). Two-way analysis of variance was used to explore the impact of age of menarche and gynaecological year on cycle length. Multivariate

香港華藉女生的月經病及她們的就醫行為

目的　確定青春期女性月經病的現患率及她們的就醫行為。

設計　有關月經、月經病、會診，以及影響她們就醫行為的因素的問卷調查。

安排　香港一所教學醫院附近學區的中學。

參與者　來自10間中學的5609名女生。

主要結果測量　月經病的現患率及她們的就醫行為。

結果　被訪者平均年齡為15.1歲（標準差：2歲），首次月經來潮的平均年齡為12.3歲（標準差：1.1歲）。月經過多、經痛、有經期綜合症的比率分別為17.9%（95%置信區間：16.9-19.1%）、68.7%（67.7-70.3%）、37.7%（36.7-39.3%）。隨着婦科年齡（即年歲減首次月經來潮的年齡）增加，經期徵狀（P<0.001）和經痛（P<0.001）的現患率有所增加，但過短（P=0.002）或過長（P=0.009）月經週期的人數比例隨之減少。8位女生中有1位因與月經有關的原因而請假，但只有6.4%曾因此而就醫。至於女生會否就醫這問題，多因素分析發現因月經過多而就醫會視乎家人的意見（P=0.005），因經痛而就醫則會視乎其嚴重程度（P=0.046）和回答尷尬問題的憂慮（P=0.039）。

結論　香港華藉女生的月經病現患率高，明顯影響學校及日常的活動，但只有少數女生會因此而就醫。

stepwise logistic regression analysis was performed, using all significant predictors for avoidance of seeking medical care and advice identified by univariate analysis. All statistical analyses were performed using the Statistical Package for the Social Sciences (Windows version 15.0; SPSS Inc, Chicago [IL], US). Any P value of 0.05 or less was considered statistically significant.

Results

The study was conducted between September 2005 and June 2006. Twenty secondary schools were randomly selected from the New Territories East District of Hong Kong. Ten selected schools agreed to participate (response rate, 50%). A total of 5609 girls completed the study, amounting to an overall response rate of 96.5% of those approached. The response rate to most items ranged from 92.6 to 99.0%, but age at menarche was reported by only 87.4% of the participants and menstrual cycle length by only 63.8%.

The mean age of the girls was 15.1 (standard deviation [SD], 2.0; range, 11.2-20.0) years. In all, 550 (9.8%) girls were pre-menarche; whereas 89.2% reported being post-menarche and 0.8% did not know their menarche status. Five (0.3% of those aged above 16 years) reported they had not yet attained
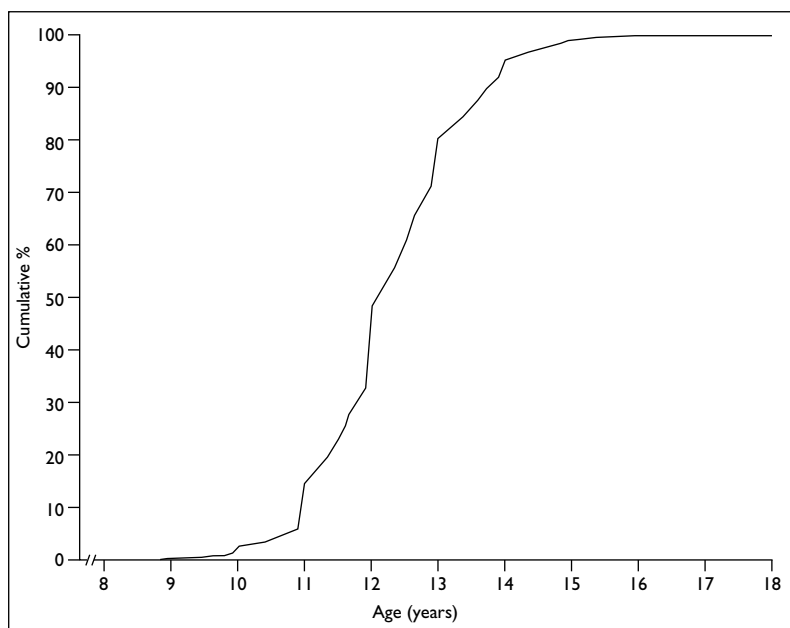
FIG 1. Proportion of girls who had attained menarche according to age

TABLE 1. Prevalence of reported short, normal, and long menstrual cycle lengths

Gynaecological year	Cycle length		
	<21 days* No. (%)	21-35 days† No. (%)	>35 days‡ No. (%)
1st (n=301)	26 (8.6)	230 (76.4)	45 (15.0)§
2nd (n=495)	29 (5.9)	421 (85.1)	45 (9.1)
3rd (n=563)	27 (4.8)	489 (86.9)	47 (8.3)
4th (n=481)	25 (5.2)	423 (87.9)	33 (6.9)
5th (n=461)	13 (2.8)	395 (85.7)	53 (11.5)
6th (n=294)	12 (4.1)	253 (86.1)	29 (9.9)
7th (n=309)	6 (1.9)	274 (88.7)	29 (9.4)

* χ^2 for trend=21.1, P=0.002
† χ^2 for trend=26.0, P<0.001
‡ χ^2 for trend=17.6, P=0.009
§ Statistically significant as compared to each gynaecological year except the 5th year

TABLE 2. Reported cycle lengths and perceived normality of the menstrual cycle length

Cycle length	Girls' interpretation of the status of their menstrual cycle		
	Normal (n=2134) No. (%)	Abnormal (n=866) No. (%)	Do not know (n=197) No. (%)
<21 days	80 (3.7)	68 (7.8)	9 (4.6)
21-35 days	1986 (93.1)	579 (66.9)	166 (84.3)
>35 days	68 (3.2)	219 (25.3)	22 (11.1)

and 90th percentile were 11 years and 13 years and 9 months, respectively. Figure 1 shows the proportion of girls who had attained menarche by age.

At the first menstrual year, only 76.4% of girls had a normal cycle length (21-35 days); 8.6% and 15.0% had short (<21 days) and long cycles (>35 days), respectively. The proportion of both short and long cycles decreased with gynaecological age; the main drop occurred at the second year. While the proportion of short cycles continued to drop with gynaecological age, there was an increase in the proportion of long cycles at the fifth gynaecological year, which then stayed at around 10% (Table 1). The age of menarche had no impact on the menstrual cycle length. Table 2 shows the relationship between the girls' reported cycle length and the perceived normality of their menstrual cycle. Among those who perceived that they had normal menstrual cycles, 3.7% and 3.2% of them reported cycles that were short (<21 days) and long (>35 days), respectively. For those who regarded their menstrual cycles as abnormal, 66.9% had normal cycle lengths, while 84.3% of those who did not know whether their menstrual cycles were normal or not had normal cycle lengths.

The mean menstrual period lasted for 5.4 (SD, 1.8) days; the 10th and 90th percentiles were at 3.5 and 7 days, respectively. Normal menstrual flow was reported in 75.4% of the girls; 16.4% and 1.5% reported heavy and very heavy menstrual flow respectively, while 5.9% and 0.8% reported light and very light menstrual flow respectively. The amount of menstrual flow did not correlate with gynaecological age.

Dysmenorrhoea occurred in 68.7% of the girls and its prevalence increased significantly with menstrual age (χ^2 for trend=214.4, P<0.001). Among those with dysmenorrhoea, the pain was always present in 16%, while 37% and 47% reported having pain frequently and occasionally, respectively. The majority of the girls (62.5%) did not take analgesics, while they were always required by 5.8%, and sometimes by 31.6%. Besides dysmenorrhoea, 37.7% of the girls (95% confidence interval [CI], 36.7-39.3%) reported other menstruation-related symptoms. These included: dizziness (30.2%), anxiety (29.7%), breast tenderness (27.9%), headache (27.5%), change of bowel habit (25.6%), abdominal pain (24.2%), back pain (24.2%), abdominal bloating sensation (24.2%), fatigue (24.2%), and nausea (6.2%). The prevalence of these symptoms significantly increased with the menstrual year (χ^2 for trend=303.3, P<0.001) [Fig 2]. Overall, the prevalence of menstrual problems, including menorrhagia, was 77.9% (95% CI, 76.9-79.1%). There was no association between the socio-demographic background and any of these menstrual problems.

Table 3 summarises the prevalence of individual menstrual symptoms and the rate of absenteeism

menarche. Those who did not know their menarche status were all younger than the age of 16 years. The mean age of menarche was 12.3 (SD, 1.1) years and the median age was 12.1 (range, 8-17.5) years. The 10th

from school and seeking medical help. Overall, 33.6% of menstruating girls reported reduced daily activity because of menorrhagia; 12.1% reported absenteeism from school because of menstruation-related symptoms, however only 6.4% had sought medical advice. Among them, 51.3% consulted gynaecologists, 25.7% attended family doctors, 5.8% paediatricians, and 4.1% Chinese herbalists.

Factors affecting the decision to seek medical attention were the severity of their symptoms (85.2%), opinion of a family member (75.7%), the doctor's gender (68.7%), anxiety about facing embarrassing questioning (65.3%), cost of the consultation (57.4%), worry about physical examination (56.6%), and time constraints (52.9%). Multivariate analysis indicated that opinion of a family member (P=0.005) was the only factor affecting the decision to seek medical care for menorrhagia, while for dysmenorrhoea it was the severity of pain (P=0.046) and anxiety about facing embarrassing questions (P=0.039).

The majority of the girls preferred seeking advice from their family members (70.0%) and friends (40.7%), while only 12.7% and 6.5% preferred advice from doctors and teachers, respectively. They would also seek information from other sources, which included: newspapers or books (24.3%), the internet (12.3%), television or radio programmes (11.9%), and health talks (8.5%).

Discussion

To the best of our knowledge, this is one of the largest studies of menstrual problems in Chinese girls, and the largest ever conducted in Hong Kong. With the support from the schools, a very high response rate was obtained for most of the questions. In Hong Kong, as free, compulsory education is provided to all children of the relevant age (9 years up to grade 3 of secondary education corresponding to the age of 15 years), the study population was representative of all adolescent girls.

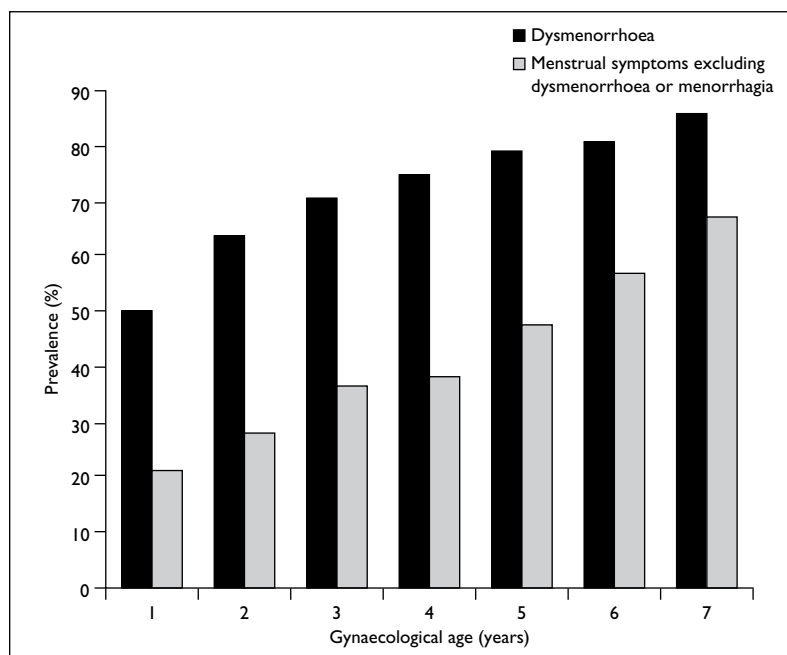The age of menarche in each population is worth studying, because it may be affected by race

FIG 2. Prevalence of dysmenorrhoea and other menstrual symptoms (ie excluding dysmenorrhoea or menorrhagia)

or ethnicity.[12,13] Ideally, health education about menstruation should start before menarche so that girls are prepared psychologically and physically. In a multicentre study conducted by the World Health Organization (WHO) in 1986, the median age of menarche for girls in Hong Kong was 12 years and 9 months. By the age of 11 years and 2 months and 14 years and 2 months, 10% and 90% of girls had passed menarche, respectively.[12] In the present study, the median age of menarche was 12.1 years, which was earlier than 20 years ago. For each chronological age from 11 to 14 years, there was a statistically higher proportion of girls that were post-menarche compared to the WHO study (P=0.01 to P<0.001; results not shown). The average age at menarche decreased from 15-17 years to about 13-13.5 years between the early 1800s and the mid-1900s, but a further decrease was evident in some but not in other communities.[14-17]

TABLE 3. Prevalence of the menstrual problems, sick leave, and consultations

Menstrual problems	No.*	Prevalence No. (%)	95% Confidence interval	Sick leave No. (%)	Consultation No. (%)
Menorrhagia	4978	891 (17.9)	16.9-19.1%	330 (6.6)	159 (3.2)
Dysmenorrhoea	5008	3440 (68.7)	67.7-70.3%	512 (10.2)	199 (4.0)
Other symptoms†	5004	1886 (37.7)	36.7-39.3%	217 (4.3)	97 (1.9)
Any of the above	5008	3837 (76.6)	75.5-77.7%	606 (12.1)	320 (6.4)

* Number of girls answering that question
† Other symptoms included dizziness, anxiety, breast tenderness, headache, change of bowel habit, abdominal pain, back pain, abdominal bloating sensation, fatigue, and nausea

Whether the age of menarche in Hong Kong girls will continue to fall is unknown.

Although our study did not specifically test the girls' knowledge on menstruation, our findings confirm that a significant proportion had poor understanding of the normal menstrual cycle length. Similar findings regarding correct perceptions by adolescents about cycle length and menstrual duration were reported in Taiwan and the United States.[18,19] For example, 14.3% of the girls did not know whether their menstrual cycle length was normal or abnormal, 22.7% had an incorrect concept of what a normal menstrual cycle was, and 36.2% was unable to report their cycle length. Furthermore, 66.9% of those who believed that their menstrual cycle was abnormal in fact had normal cycle lengths. On the other hand, among those who believed that their menstrual cycle was normal, 3.7% had short and 3.2% had long menstrual cycles; 2.8% had cycles of >45 days (results not shown above). It was also the opinion of the expert panel that the young girls as well as their parents, had difficulty assessing what constitute normal menstrual cycles or patterns of bleeding.[20] Therefore, asking girls whether their menstrual cycles were normal or not may miss a significant proportion of cases of abnormal menstruation. Appropriate evaluation of the menstrual cycle length in adolescent girls should therefore include detailed charting of the dates of their previous menstruation.

Overall, the prevalence of menstrual problems in Chinese girls in Hong Kong is high and similar to that reported in other communities.[1-7] Menstrual cycles are often irregular in early gynaecological life. However, by the third year after menarche, 60 to 80% of cycles were 21 to 35 days long.[21-23] The proportion of girls with abnormal cycle lengths decreased in each of the first 3 years after menarche. Thereafter, the trend was stable and therefore abnormalities of cycle length in the fourth year after menarche should be monitored and evaluated. Polycystic ovarian syndrome, weight loss, and exercise are frequent endocrine causes of menstrual disorders in girls.[24] Lack of awareness of abnormalities of menstruation may delay proper investigation and treatment.

Menstrual problems cause significant debility in adolescent girls. In this study, about one third had to restrict their daily activity during menstruation and 12% missed school. Almost 70% of the girls suffered dysmenorrhoea, and 10% took sick leave. However, despite the significant impact on health, only a small proportion of the girls in our study had sought medical advice. This suboptimal use of the health care system or low consultation rate by adolescents has also been reported elsewhere, but it is uncertain whether our situation is worse than that in other areas.[2,3,9] A previous local study reported that half of the adolescents did not seek treatment for menstrual pain.[11] The majority of the girls would seek advice from family members (mostly their mothers and friends) before considering seeking medical advice. Without the support from their family, the girls may be helpless and avoid seeing doctors. This may result in unnecessary suffering and acceptance of the menstrual problems. Such stoicism may have been taught by their families. Future research into the girls' attitudes towards menstrual problems and those of their mothers is warranted. Health education targeting mothers may also benefit their daughters.

Other barriers to adolescent girls seeking medical attention should also be explored. Health education on puberty and menstruation is regarded as inadequate for many adolescent girls both in Chinese and other populations.[1,25] This might adversely affect the seeking of medical attention for menstrual problems. Not uncommonly, girls regard questions about menstruation and potential gynaecological examination as threatening and embarrassing. It has been suggested that asking girls to chart their menses may be beneficial.[20] Primary health care workers could even encourage girls to adopt the menses chart once their menarche is reached. Reviewing the menstrual chart with the girls may educate them and rectify any misconception, and may also lead to earlier management of any underlying problems.

One of the limitations of the current study is that there is lack of information on sexual activity and use of contraception in the girls, as this is considered a very sensitive matter in any school survey in Hong Kong. However, according to another local study, only 5.2% of girls aged 18 years or below are sexually active and among them, only 15% and 7.5% used oral or injectable forms of contraception.[26] The rates of menstrual cycle and related symptoms obtained in our study probably reflect the true prevalence of such conditions in our population.

Conclusions

The prevalence of menstrual problems in Chinese adolescent girls is high and may adversely affect their education and daily activity. However, their knowledge is often poor and only a minority seek medical advice. Proper education about menstruation and its related problems is important for both the adolescent girls and their mothers in order to prevent avoidance of medical care. Factors affecting avoidance of health-seeking behaviour should be further evaluated and interventions implemented to address these factors.

Acknowledgements

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