Acceptability of different mechanisms of action of contraception in women: a questionnaire survey

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ABSTRACT

Background The mechanism of action of a contraceptive method is an importantg consideration in a woman's choice of contraception. For the development of new methods of contraception it is important to understand the acceptability of different contraceptive mechanisms within a population.

Methods We recruited women attending contraceptive, termination of pregnancy or postnatal care services in Hong Kong for a questionnaire survey on their acceptability of the different ways in which contraceptive methods prevent pregnancy. Univariable and multivariable analyses were used to establish factors which may predict acceptability of the mechanism of action.

Results A total of 1448 women completed the survey. The acceptability of contraceptive methods that act by preventing fertilisation ranked highest (78%), followed by those that inhibit ovulation (52%), disrupt implantation (43%) and dislodge an implanted embryo (30%). A history of termination of pregnancy was associated with greater acceptance of all posited contraceptive mechanisms. There was a very low degree of agreement between the declared acceptance of the various contraceptive mechanisms and the ever use of a method with the respective mechanism of action (Cohen's kappa coefficient range 0.017–0.162).

Conclusions In this population the acceptability of contraceptive methods that act by preventing fertilisation ranked highest, followed by those that inhibit ovulation, disrupt implantation and dislodge an implanted embryo. Women who had ever had a termination of pregnancy were more likely to accept all the posited contraceptive mechanisms.

Key messages

- Contraception that prevents fertilisation was the most accepted mechanism of action in our population
- A history of termination of pregnancy was an important factor associated with acceptance of all contraceptive mechanisms
- Agreement between the declared acceptance of the various contraceptive mechanisms and ever use of a method with the respective mechanism was very poor

INTRODUCTION

Worldwide, there are around 121 million unintended pregnancies annually with 61% ending with abortion.[1] In Hong Kong the annual birth rate is around 50 000–60 000[2] and more than 8000 pregnancies are terminated every year.[3] One in 10 women in Hong Kong have experienced at least one termination of pregnancy.[4] In some countries with a constant fertility rate, increased contraceptive usage has been found to be associated with a reduction in abortion rates.[5] The most commonly used contraceptive method worldwide is female sterilisation, followed by male condoms and oral contraceptives.[6] In Hong Kong, the most commonly used contraceptive method is the male condom, followed by oral contraceptives, intrauterine devices and female sterilisation.[4] Although there is a range of contraceptive methods available, uptake and continued use is limited by their side effects and acceptability to the user.

While ongoing research aims to develop newer contraceptive methods with different mechanisms of action, contraception uptake remains a major issue to be addressed and involves multiple complex factors. The mechanism of action is one of the most important considerations that determines a woman's contraceptive

choice.[7] In particular, contraceptive methods with post-ovulatory or post-fertilisation mechanisms of action may be shunned by some for religious or moral reasons. Additionally, some may perceive such methods to have an abortifacient effect,[8] although current medical and legal opinions regard conception to begin with implantation, not fertilisation. On the other hand, for accepting individuals, post-ovulatory actions confer a bonus by contributing additional points of action, and methods with post-ovulatory actions such as intrauterine devices generally have high effectiveness. It is imperative to understand what women generally prefer and the factors influencing their preference.

A study in the UK[9] showed that most women surveyed were willing to consider emergency contraception with different posited mechanisms of action, including inhibition of ovulation, prevention of implantation and disruption of an implanted embryo.[10] Similar information on regular contraceptive methods remains limited, and can vary among populations due to cultural and religious differences.[11] The current study was conducted to investigate the acceptability of various contraceptive methods with different mechanisms of action by women in Hong Kong within the three common family planning settings: birth control (BC), termination of pregnancy (TOP) and postnatal (PN) care services. Understanding womens' attitudes and concerns in the local setting is very important for guiding the provision of patient-centred counselling as well as service development, which has tremendous public health implications.

METHODS

Study participants

This was a prospective questionnaire study. Women attending healthcare services in the following three settings were recruited: (1) those attending the BC services of the Family Planning Association of Hong Kong (FPAHK) or Maternal and Child Health Centres (MCHCs) for routine or emergency contraceptive provision or counselling (BC group); (2) those attending FPAHK or Queen Mary Hospital (QMH), Hong Kong for TOP (TOP group); and (3) those attending MCHCs and QMH for PN care (PN group). We designed a questionnaire for self-completion based on a similar UK study[9] with some modifications. Both English and Chinese versions of the questionnaire were provided, depending on the preference of the subjects. Women aged ≥18 years who were able to read either English or Chinese were identified. The study was explained by research staff at the recruitment sites, and written consent was obtained from all the recruited subjects.

Questionnaire

The anonymous questionnaire consisted of three parts (see online supplemental figure 1). The first asked whether they would consider using a contraceptive method acting through one of the four mechanisms: (1) inhibition of ovulation, (2) prevention of fertilisation, (3) disruption of implantation and (4) dislodging an implanted embryo. If the subject answered 'yes' to (4), this prompted two follow-up questions on the acceptability of taking a theoretical pill in the late luteal phase or shortly after missing a period to dislodge the implanted embryo. The second part asked about the women's previous contraceptive use and future contraceptive options. The third and final part asked about the respondent's basic demographic data and previous obstetric history including that of induced abortions.

Ethics approval

Ethics approval for the study was obtained from the joint Institutional Review Board of the University of Hong Kong and Hospital Authority Hong Kong West Cluster, and the Ethics Committee of the Department of Health, Hong Kong. The study was also approved by the Health Services Subcommittee, the Family Planning Association of Hong Kong.

Statistical analysis

The sample size per group was calculated based on the formula by Creative Research Systems (2003). A minimum of 384 subjects would be required to determine the 95% confidence level with a margin of error of 5%. Allowing for 15% incomplete responses, 450 subjects per group was planned.

Categorical data were compared between groups using the χ^2 test whereas continuous variables were compared using the ANOVA test. Parameters with $p<0.05$ in the univariate analysis were selected for inclusion in the multivariable regression analysis. Missing or 'uncertain' answers were not included in analyses of the respective questions. Cohen's kappa coefficient (κ) was used to determine agreement between the declared acceptance of contraceptive methods with different mechanisms of action and the actual use of a method with the respective mechanism of action. For this analysis of agreement, oral contraceptive pills, hormonal patches, injectables and subdermal implants were classified as methods that inhibit ovulation, natural and barrier methods as well as sterilisation were classified as methods that prevent fertilisation, and the intrauterine device was classified as a method that disrupts implantation. The level of statistical significance was set at p 0.05. Data analyses were performed using IBM SPSS Statistics 26 (IBM Corporation, New York, USA).

Patient and public involvement

There was no patient or public involvement in the design, execution, analysis or data dissemination stages of this study.

RESULTS

A total of 1448 women were recruited between July 2019 and May 2020, of whom 525 (36%) were in the

Table 1 Sociodemographic characteristics of the women in each group

Group	Total (n=1448)	TOP (n=525)	BC (n=473)	PN (n=450)	P value
Age (years)*	32 (26–37)	29 (23–35)[a,b]	34 (27–40)[a,c]	33 (30–36)[b,c]	<0.001
Monthly household income >HK$ 30 000	545 (39%)	135/521 (26%)[a,b]	176/463 (38%)[a,c]	234/424 (55%)[b,c]	<0.001
Attained tertiary education	742 (52%)	228/522 (44%)[a,b]	250/468 (53%)[a,c]	264/427 (62%)[b,c]	<0.001
Previous use of emergency contraception	662 (46%)	264/525 (50%)[b]	233/472 (49%)[c]	165/448 (37%)[b,c]	<0.001
History of use of hormonal contraception	567 (39%)	191/525 (36%)[a,b]	249/473 (53%)[a,c]	127/450 (28%)[b,c]	<0.001
History of use of intrauterine device	94 (6.5%)	26/525 (5%)[b]	57/473 (12%)[c]	11/450 (2%)[b,c]	<0.001
Having been pregnant before†	981 (68%)	356/525 (68%)	295/472 (63%)[c]	330/449 (74%)[c]	0.02
Having children	993 (68.7%)	289/525 (55%)[b]	255/472 (54%)[c]	449/449 (100%)[b,c]	<0.001
Previous or current termination of pregnancy	761 (53%)	525/525 (100%)[a,b]	147/470 (31%)[a,c]	89/450 (20%)[b,c]	<0.001
Holding religious beliefs	417 (29%)	126/525 (24%)[a]	142/464 (31%)[a]	149/446 (33%)[b]	0.004
Chinese ethnicity	1264 (88%)	462/525 (88%)[b]	426/469 (91%)[c]	376/450 (84%)[b,c]	0.004

Values expressed as N (%) unless otherwise stated.
[a,b,c], p<0.05; [a]TOP vs BC; [b]TOP vs PN; [c]BC vs PN.
*Median (25th–75th centile).
†Disregarding the index pregnancy in the TOP and PN groups.
BC, birth control group; PN, postnatal group; TOP, termination of pregnancy group.

TOP group (228 from QMH and 297 from FPAHK), 473 (33%) in the BC group (306 from FPAHK and 167 from MCHCs) and 450 (31%) in the PN group (346 from QMH and 104 from MCHCs). Table 1 shows the sociodemographic characteristics of the women in each group. Women in the TOP group were significantly younger, had lower monthly household income and lower education levels than those in the BC and PN groups. The likelihood of ever using hormonal or intrauterine contraception was highest in the BC group, followed by the TOP group when compared with the PN group.

Table 2A shows that, in all groups, the acceptability of contraceptive methods that act by preventing fertilisation ranked highest (78%), followed by those that inhibit ovulation (52%), which was in turn higher than those that disrupt implantation (43%) or dislodge an implanted embryo (30%). Acceptance of all four studied contraceptive mechanisms was significantly higher in the TOP group than in the BC and PN groups. Table 2B shows that, among women who were accepting of a contraceptive method that acted by dislodging an implanted embryo, those from the TOP group were more likely to accept a contragestive pill (a 'missed period pill') than those from the BC group (OR 1.417, 95% CI 1.099 to 1.826, p=0.010).

There was a very low degree of agreement between the declared acceptance of the various contraceptive mechanisms and the ever use of a method with the respective mechanism of action (κ=0.017–0.162) (table 3o).

The associations between sociodemographic factors and acceptability of the studied contraceptive mechanisms are shown in table 4. In all groups, a history of TOP was significantly associated with a higher acceptability of all four posited contraceptive mechanisms. Women with children had significantly lower acceptance towards contraceptive methods that prevented fertilisation and implantation, and those

Table 2 Percentage of women in each group who answered 'yes' to (A) using a method with different mechanisms of action, and (B) using a contragestive pill shortly before the next expected period or shortly after missing a period

(A)					
Mechanism of action	**Total (n=1448)**	**TOP (n=525)**	**BC (n=473)**	**PN (n=450)**	**P value**
Prevent fertilisation	1130/1446 (78%)	434/525 (83%)[b]	376/471 (80%)[c]	320/450 (71%)[b,c]	<0.001
Inhibit ovulation	785/1448 (52%)	312/525 (60%)[a,b]	248/473 (52%)[a,c]	198/450 (44%)[b,c]	<0.001
Prevent implantation	617/1448 (43%)	290/525 (55%)[a,b]	199/473 (42%)[a,c]	128/450 (28%)[b,c]	<0.001
Disrupt an implanted embryo	433/1442 (30%)	219/525 (42%)[a,b]	143/468 (31%)[a,c]	71/449 (16%)[b,c]	<0.001
(B)	**Total**	**TOP**	**BC**	**PN**	**P value**
Before the next expected period	298/428 (70%)	153/218 (70%)	96/140 (69%)	49/70 (70%)	0.946
Shortly after a missed period	304/428 (71%)	165/217 (76%)[d]	90/142 (63%)[d]	49/69 (71%)	0.035

[a,b,c], p<0.05; [a]TOP vs BC; [b]TOP vs PN; [c]BC vs PN; [d]OR 1.417, 95% CI 1.099 to 1.826, p=0.010.
BC, birth control group; PN, postnatal group; TOP, termination of pregnancy group.

Table 3 Correlation between the declared acceptance of contraceptive methods with different mechanisms of action and the ever use of a method with the respective mechanism of action

Accepting of a contraceptive method which:	Actual use of a contraceptive method with the respective mechanism of action		Cohen's kappa coefficient (κ)
	Yes	No	
Inhibits ovulation			0.162
Yes	356/1448 (24.6%)	402/1448 (27.8%)	
No	211/1448 (14.6%)	479/1448 (33.1%)	
Prevents fertilisation			0.017
Yes	1010/1446 (69.8%)	120/1446 (8.3%)	
No	278/1446 (19.2%)	38/1446 (2.6%)	
Prevents implantation			0.039
Yes	52/1448 (3.6%)	565/1448 (39.0%)	
No	42/1448 (2.9%)	789/1448 (54.5%)	

that dislodged an implanted embryo. The factors that predicted acceptability of contraceptive methods with each posited mechanism of action with or without adjusting for other significant factors are shown in table 4. A history of TOP was the independent factor predicting acceptability of contraceptive methods with all the four studied posited mechanisms.

The acceptance rate for the four mechanisms in women with different religions is shown in online supplemental figure 2. Acceptance of methods that prevent fertilisation was comparatively lower among Hindus and Muslims. In contrast, acceptance of methods that disrupt implantation or dislodge an implanted embryo was comparatively lower among women who were Protestant Christians or Hindus, but not among others when compared with those declaring no religion.

DISCUSSION

Contraceptive methods that prevent fertilisation were the most accepted by women in our study (78%), followed by those that inhibit ovulation (52%) and prevent implantation (43%). Contraceptive methods that dislodge an implanted embryo were the least acceptable (30%). A history of TOP was found to be an important factor associated with increased acceptance of all contraceptive mechanisms, whereas women who had children had lower acceptance of methods that prevent fertilisation, disrupt implantation or dislodge implanted embryos.

The majority of women who took part in the current questionnaire study were willing to consider the use of contraceptive methods which prevent fertilisation. Contraceptive methods which inhibit ovulation were less accepted than methods that prevent fertilisation, but still higher than those which disrupt implantation. This is similar to a multicentre study in 1999 on attitudes towards a once-a-month pill according to its mode of action.[12] The study included women from Edinburgh, Cape Town, Hong Kong and Shanghai and found that the acceptability of contraceptive methods preventing ovulation was higher than those disrupting implantation or dislodging an implanted embryo. In that study, the women in the Hong Kong arm were recruited from a similar setting in MCHCs. The proportion of Hong Kong women accepting of a once-a-month pill that might act by preventing ovulation, implantation or disrupting an implanted embryo were all apparently higher than in the current study, although the questions in the two studies were not phrased exactly the same. According to a study published by the Family Planning Association of Hong Kong in 2017, the most commonly used contraceptive methods were the male condom (79.4%) followed by oral contraceptive pills (6.3%). Moreover, the use of contraceptive pills fell from 16.3% in 1997 to 6.3% in 2017.[4] A recent survey from Hong Kong indicated that a considerable proportion of women expressed concerns about actual or anticipated side effects of the contraceptive pill.[13] This might partly explain the lower acceptance of contraceptive methods that prevent ovulation in our study.

Perhaps not unexpectedly, women from the TOP setting were more likely to accept contraceptive methods that act by all mechanisms of action. This is in line with the finding of the UK study.[9] Women experiencing a recent unintended pregnancy may have a stronger intention to use birth control methods with any mechanism to prevent another unplanned pregnancy.

An important finding of the present study was the low degree of agreement between acceptance of a particular contraceptive mechanism and the ever use of methods acting by the respective mechanism. Such findings suggest that there might be a discrepancy in what users think is important in theory and what they eventually choose in reality. Moreover, it might imply that many women might not fully understand how exactly their chosen contraceptive methods work. Further research in our setting is therefore justified to explore women's actual understanding of how each contraceptive method works as well as the relative influence of that compared with other factors affecting contraceptive choice such as non-contraceptive benefits, cost, convenience, efficacy and safety.

Table 4 Prediction of sociodemographic factors on the acceptability of contraception that (A) inhibits ovulation, (B) prevents fertilisation, (C) prevents implantation, and (D) disrupts an implanted embryo by univariable (expressed by the OR) and multivariable logistic regression (expressed by the adjusted OR)

	Contraceptive mechanism											
	Inhibits ovulation			Prevents fertilisation			Prevents implantation			Disrupts an implanted embryo		
Factors	N (%)	OR (95% CI)	Adjusted OR (95% CI)	N (%)	OR (95% CI)	Adjusted OR (95% CI)	N (%)	OR (95% CI)	Adjusted OR (95% CI)	N (%)	OR (95% CI)	Adjusted OR (95% CI)
History of termination of pregnancy: yes vs no	442 (58%) vs 314 (46%)	1.633 (1.326 to 2.011) (p<0.001)*	1.509 (1.212 to 1.878) (p<0.001)*	621 (82%) vs 507 (74%)	1.551 (1.206 to 1.994) (p=0.001)	1.607 (1.234 to 2.094) (p<0.001)*	388 (51%) vs 228 (33%)	2.080 (1.681 to 2.575) (p<0.001)*	2.050 (1.654 to 2.540) (p<0.001)*	285 (38%) vs 147 (22%)	2.198 (1.738 to 2.778) (p<0.001)*	2.029 (1.591 to 2.589) (p<0.001)*
Holding religious beliefs: yes vs no	216 (52%) vs 546 (53%)	0.966 (0.769 to 1.214) (p=0.086)	NA	319 (77%) vs 802 (79%)	0.882 (0.671 to 1.158) (p=0.365)	NA	177 (42%) vs 436 (43%)	0.984 (0.782 to 1.240) (p=0.894)	NA	125 (30%) vs 305 (30%)	1.008 (0.786 to 1.293) (p=0.948)	NA
Chinese ethnicity vs non-Chinese ethnicity	648 (51%) vs 107 (59%)	0.718 (0.523 to 0.986) (p=0.040)*	0.644 (0.462 to 0.898) (p=0.009)*	994 (79%) vs 134 (74%)	1.273 (0.887 to 1.827) (p=0.189)	NA	538 (43%) vs 78 (43%)	0.969 (0.707 to 1.328) (p=0.845)	NA	367 (29%) vs 64 (36%)	0.732 (0.527 to 1.018) (p=0.063)	NA
Ever been pregnant vs never been pregnant	681 (51%) vs 77 (60%)	0.707 (0.488 to 1.023) (p=0.065)	NA	1026 (78%) vs 104 (71%)	0.811 (0.511 to 1.288) (p=0.374)	NA	564 (43%) vs 53 (41%)	1.057 (0.731 to 1.528) (p=0.768)	NA	394 (30%) vs 39 (31%)	0.978 (0.659 to 1.451) (p=0.914)	NA
Having children vs no children	507 (51%) vs 250 (55%)	0.847 (0.678 to 1.059) (p=0.145)	NA	753 (76%) vs 375 (83%)	0.658 (0.495 to 0.874) (p=0.004)	0.736 (0.544 to 0.995) (p=0.046)*	405 (41%) vs 212 (47%)	0.783 (0.626 to 0.979) (p=0.032)*	0.843 (0.671 to 1.059) (p=0.143)	260 (26%) vs 173 (38%)	0.576 (0.455 to 0.730) (p<0.001)*	0.621 (0.487 to 0.792) (p<0.001)*
Tertiary education vs below tertiary education	368 (50%) vs 378 (56%)	0.773 (0.627 to 0.953) (p=0.016)*	0.904 (0.718 to 1.140) (p=0.395)	596 (80%) vs 513 (56%)	1.290 (1.001 to 1.662) (p=0.049)	1.316 (1.002 to 1.727) (p=0.048)*	313 (42%) vs 295 (44%)	0.940 (0.761 to 1.160) (p=0.564)	NA	219 (30%) vs 211 (32%)	0.911 (0.726 to 1.143) (p=0.420)	NA
Monthly household income:<HK$30 000 vs ≥HK$30 000	256 (47%) vs 489 (57%)	0.677 (0.546 to 0.840) (p<0.001)*	0.760 (0.600 to 0.964) (p=0.023)*	436 (80%) vs 668 (77.5%)	1.162 (0.892 to 1.512) (p=0.265)	NA	217 (40%) vs 388 (45%)	0.810 (0.651 to 1.007) (p=0.058)	NA	144 (27%) vs 283 (33%)	0.733 (0.578 to 0.929) (p=0.010)*	0.870 (0.679 to 1.114) (p=0.870)

*P<0.05 (statistically significant)
**Including the index pregnancy for the termination of pregnancy and postnatal groups.

One of the strengths of this study was the wide coverage of the major settings where contraceptive counselling and provision were carried out in Hong Kong. Another strength of this study is the relatively large sample size. A limitation was that the two language versions of the questionnaire used in this study did not go through formal validation when being translated from English into Chinese. However, the questionnaire enquired about simple facts and opinions with structured response options, and both versions were proofread by investigators who were all proficient in both languages. Another limitation was the self-completion nature of this questionnaire, which might have resulted in missed entries and misinterpretation of the questions. The number of women who were approached but declined to participate in the study was not recorded. This questionnaire was based on what the women would choose in theory if they needed contraception, which might not translate to what they would actually choose in practice. Finally, this questionnaire survey was a quantitative study and further qualitative research might help understand the reasons behind the responses that women give.

New contraceptive methods based on different mechanisms in the reproductive cycle are actively under research.[14] The relatively lower acceptance of methods disrupting implantation or dislodging implanted embryos may predict possible controversies over new 'contragestive' methods that act in the luteal phase or shortly after the woman has missed a period. Although contraception providers should never assume that particular methods may be more or less acceptable to individuals with certain characteristics, an awareness of factors that might predict acceptability of different contraceptive mechanisms may be valuable when discussing contraceptive options.

CONCLUSION

Our study shows that the most widely accepted contraceptive mechanism in our population is the prevention of fertilisation, followed by the inhibition of ovulation and the prevention of implantation. Disruption of an implanted embryo is less accepted. A history of TOP is associated with a significantly higher acceptance of all posited contraceptive mechanisms. There is a low degree of agreement between acceptance of a particular contraceptive mechanism and the actual use of methods acting by the respective mechanism.

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Contributors YWT and RHWL conceived the original research question. YWT, SSTL, BWKF, SC, EHYN and RHWL planned the study and designed the survey questionnaire. YWT, SSTL, BWKF and RHWL organised and liaised with the centres involved in recruitment of subjects. YWT collated data, undertook analyses, prepared tables and figures, and wrote the first draft of the manuscript. YWT, SSTL, BWKF, SC, EHYN and RHWL contributed to data interpretation, revised the first and subsequent drafts critically for intellectual content and approved the final manuscript. All authors agree to be accountable for all aspects of the work. YWT is the manuscript guarantor.

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REFERENCES

1 Bearak J, Popinchalk A, Ganatra B, *et al*. Unintended pregnancy and abortion by income, region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. *Lancet Glob Health* 2020;8:e1152–61.
2 Census and Statistics Department HKSAR. Hong Kong in Figures, 2020. Available: https://www.statistics.gov.hk/pub/B10100062020AN20B0100.pdf
3 Wong SL. *Health implications of Hong Kong abortion laws*. Pokfulam, Hong Kong: University of Hong Kong, 2013.
4 Family Planning Association of Hong Kong. Family planning knowledge, attitude and practice in Hong Kong survey 2017.
5 Marston C, Cleland J. Relationships between contraception and abortion: a review of the evidence. *Int Fam Plan Perspect* 2003;29:6–13.
6 United Nations Department of Economic and Social Affairs. *Contraceptive use by method 2019: data booklet (ST/ESA/SER.A/435*, 2019. ttps://digitallibrary.un.org/record/3849735
7 Donnelly KZ, Foster TC, Thompson R. What matters most? The content and concordance of patients' and providers' information priorities for contraceptive decision making. *Contraception* 2014;90:280–7.
8 Larimore WL, Stanford JB, Kahlenborn C. Does pregnancy begin at fertilization? *Fam Med* 2004;36:690–1.
9 Willetts SJ, MacDougall M, Cameron ST. A survey regarding acceptability of oral emergency contraception according to the posited mechanism of action. *Contraception* 2017;96:81–8.
10 Ulmann A. Uses of RU 486 for contragestion: an update. *Contraception* 1987;36 Suppl:27–31.
11 Srikanthan A, Reid RL. Religious and cultural influences on contraception. *J Obstet Gynaecol Can* 2008;30:129–37.
12 Glasier AF, Smith KB, Cheng L, *et al*. An international study on the acceptability of a once-a-month pill. *Hum Reprod* 1999;14:3018–22.
13 Lo SS, Fan SY. Acceptability of the combined oral contraceptive pill among Hong Kong women. *Hong Kong Med J* 2016;22:231–6.
14 Baird DT, Glasier AF. The science, medicine, and future of contraception. *West J Med* 2000;172:321–4.