Awareness of fertility preservation among Chinese medical students

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ABSTRACT

Introduction: The fertility preservation (FP) services offered in Hong Kong are underutilised. There have been no previous studies on Chinese medical students to investigate the underlying reasons for this underutilisation in terms of awareness, knowledge, and attitudes towards FP and age-related fertility.

Methods: This was a cross-sectional survey among Chinese medical students in Hong Kong.

Results: The majority of participants (77.8%) were not familiar with any clinics or specialists who provide FP services. The vast majority (88.1%) underestimated female infertility at age 45 years, and 89.8% overestimated the age of male fertility decline. The students' FP knowledge was mainly acquired from electronic media (58.4%) and medical school (57.6%). Medical students showed overwhelming support towards FP for medical reasons (97.9%) but had mixed responses about FP for elective reasons related to career development in women (58.8%). Of the participants, 80.2% agreed that the government should subsidise FP services for patients with medical reasons.

Conclusion: This study highlights the limited awareness and knowledge of FP among Chinese medical students. There is a strong worldwide need to increase education about and exposure to FP in the medical curriculum and improve medical students' knowledge.

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New knowledge added by this study

- Chinese medical students tend to overestimate the success rate of in vitro fertilisation and the age of male fertility decline.
- Chinese medical students who had completed the clinical attachments of the obstetrics and gynaecology module rotations showed significantly higher awareness of fertility preservation, reproductive techniques used, and the availability of specialty clinics than did medical students who had not completed the module.

Implications for clinical practice or policy

- Appropriate and timely education can improve medical students' awareness and knowledge.
- More involvement from the public sector and enhanced facilities in terms of service provision and financial support could increase FP service utilisation.

Introduction

Chemotherapy, radiotherapy, certain medications for cancer, and some rheumatological and haematological diseases are gonadotoxic, which can jeopardise patients' fertility, particularly that of young cancer survivors.[1] With advancements in treatment, the 5-year survival rate of patients with cancer in childhood and adolescence has increased to over 80%.[2] Thus, improving their quality of life and reducing their risk of infertility is an important aspect of their management plan.

International clinical guidelines, including the American Society of Clinical Oncology (ASCO),[3] European Society for Medical Oncology (ESMO),[4] and Royal College of Radiologists guidelines,[5] suggest discussion of fertility preservation (FP) with patients of childhood and reproductive age during the course of cancer therapy. However, a study showed that fewer than half of oncologists routinely refer their patients to reproductive endocrinologists, and even fewer oncologists follow the guidelines, despite their willingness to discuss infertility in relation to cancer therapy.[6] Moreover, a lack of awareness and related training about FP among clinicians may cause underutilisation of FP services worldwide, including in Canada, the US, and Hong Kong.[7-9] In Hong Kong, clinicians and patients alike may consider FP as an expensive, privatised option without subsidisation.

In a previous cross-sectional study that evaluated the awareness, attitudes, and knowledge

of FP among clinicians across different specialties in Hong Kong, only 45.6% of clinicians were familiar with FP.[10] As current medical students will become our future clinicians, it is important to assess their level of understanding and awareness of fertility and FP, as this may greatly influence their future practice and consideration of appropriate interventions to improve affected patients' outcomes. Cross-sectional studies have been conducted to assess college students' awareness and knowledge of fertility in Canada,[11] Serbia,[12] and the US.[13] These studies in Western populations showed knowledge inadequacy about age-related fertility decline and FP. However, to the best of our knowledge, there are no studies in a Chinese population that have aimed to investigate the awareness, knowledge gaps, and attitudes of medical students regarding fertility and FP. Therefore, the aims of this study were to evaluate the awareness of, attitudes towards, and knowledge regarding FP among Chinese medical students in Hong Kong.

香港醫學生對保存生殖能力的認知程度

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引言：在香港，保存生殖能力服務的使用率不足。本研究旨在評估醫學生對於保存生殖能力以及對於隨年齡增長而引起生育能力改變的認知、知識和態度。

方法：研究採用橫斷面調查，向醫學生分發自填形式的網上問卷。

結果：絕大多數醫學生（77.8%）不熟悉為保存生殖能力提供服務的診所或醫生，88.1%低估了45歲女性的不育率，89.8%則高估了年長男性的生育能力。醫學生對於保存生殖能力的知識主要來自電子媒體（58.4%）和醫學院（57.6%）。醫學生普遍支持基於醫療原因而使用保存生殖能力服務（97.9%），但對於女醫學生的事業發展而使用保存生殖能力服務，支持率只有58.8%。高達80.2%醫學生同意政府應為有醫療原因需要的病人提供保存生殖能力服務津貼。

結論：研究反映了醫學生對保存生殖能力的認知和知識有限，這亦是世界各地普遍存在的問題。醫學院應在醫學課程中加入對如何保存生殖能力的教育和接觸，提高醫學生對這方面的認知和知識。

Methods

This was a cross-sectional survey conducted from November 2018 to June 2019. The study population consisted of Chinese medical students from The Chinese University of Hong Kong. Chinese undergraduate students aged ≥18 years studying in the Medicine programme and capable of communicating in English were included. Those who were non-Chinese, under age 18 years, incapable of communicating in English, and those who refused to join the study were excluded.

Eligible participants were invited to complete a self-administered online survey. The online survey was sent to participants by internal mass email and social networking applications. Snowball sampling was done by encouraging medical students to send the online survey to their classmates to boost the response rate.

The online survey was developed on an electronic form (MyCUform). The self-administered survey included a brief explanation and was comprised of four parts: (1) baseline demographic data (Table 1); (2) awareness of FP; (3) knowledge about FP (Table 2); multiple choice questions consisting of five or six options on knowledge about fertility and FP; and (4) attitudes towards FP (Tables 3 and 4). It consisted of 38 questions and took approximately 15 minutes to finish. The survey was developed after reviewing the literature.[14-16] It was assessed for logical validity by three physicians in the Department of Obstetrics and Gynaecology, who reviewed the accuracy of the contents. The survey was also piloted on a small number of doctors and medical students for content clarity and modified accordingly to incorporate the pilot participants' feedback. The final version was then administered to the full study's participants.

Statistical analysis was performed using SPSS (Windows version 24.0; IBM Corp, Armonk [NY], US). Continuous data were described as means, standard deviations, and percentiles. Categorical

TABLE 1. Demographic data of participants (n=243)*

	No. (%)
Age (years)	21.59 ± 1.848 (range, 18-28)
Gender	
Male	103 (42.4%)
Female	140 (57.6%)
Current relationship status	
Currently in a relationship	117 (48.1%)
Currently not in a relationship	126 (51.9%)
Religion	
Buddhism	7 (2.9%)
Catholic	17 (7.0%)
Christian	68 (28.0%)
Atheist	24 (9.9%)
No	124 (51.0%)
Others	3 (1.2%)
Year of medical school	
Junior (years 1-4)	114 (46.9%)
Senior (years 5-6)	129 (53.1%)

* Data are shown as mean ± standard deviation or No (%), unless otherwise specified

TABLE 2. Knowledge about fertility preservation among junior and senior medical students (given 5-9 choices for each question)*

	Junior (n=114)	Senior (n=129)	Total (n=243)	P value
Age range of women's fertility peak (years)				0.304
<20	6 (5.3%)	10 (7.8%)	16 (6.6%)	
20-24	50 (43.9%)	56 (43.4%)	106 (43.6%)	
25-29	50 (43.9%)	60 (46.5%)	110 (45.3%)	
30-34	5 (4.4%)	3 (2.3%)	8 (3.3%)	
40-45	3 (2.6%)	0	3 (1.2%)	
Age range at which women's fertility significantly decreases (years)				0.429
<29	4 (3.5%)	1 (0.8%)	5 (2.1%)	
30-34	17 (14.9%)	14 (10.9%)	31 (12.8%)	
35-39	49 (43.0%)	55 (42.6%)	104 (42.8%)	
40-44	32 (28.1%)	41 (31.8%)	73 (30.0%)	
45-49	12 (10.5%)	18 (14.0%)	30 (12.3%)	
Age range at which men's fertility significantly decreases (years)				0.182
35-39	1 (0.9%)	3 (2.3%)	4 (1.6%)	
40-44	9 (7.9%)	12 (9.3%)	21 (8.6%)	
45-49	12 (10.5%)	9 (7.0%)	21 (8.6%)	
50-54	24 (21.1%)	21 (16.3%)	45 (18.5%)	
55-59	16 (14.0%)	12 (9.3%)	28 (11.5%)	
60-64	29 (25.4%)	26 (20.2%)	55 (22.6%)	
65-69	7 (6.1%)	10 (7.8%)	17 (7.0%)	
>70	16 (14.0%)	36 (27.9%)	52 (21.4%)	
Percentage of women who are infertile at age 45 years				0.807
10%	6 (5.3%)	7 (5.4%)	13 (5.3%)	
30%	31 (27.2%)	30 (23.3%)	61 (25.1%)	
50%	36 (31.6%)	37 (28.7%)	73 (30.0%)	
70%	30 (26.3%)	37 (28.7%)	67 (27.6%)	
90%	11 (9.6%)	18 (14.0%)	29 (11.9%)	
If a woman aged 25-30 years and a man regularly have unprotected intercourse during a period of 1 year, the chance of pregnancy				0.028
10%-19%	2 (1.8%)	0	2 (0.8%)	
20%-29%	1 (0.9%)	2 (1.6%)	3 (1.2%)	
30%-39%	7 (6.1%)	4 (3.1%)	11 (4.5%)	
40%-49%	4 (3.5%)	1 (0.8%)	5 (2.1%)	
50%-59%	7 (6.1%)	7 (5.4%)	14 (5.8%)	
60%-69%	11 (9.6%)	12 (9.3%)	23 (9.5%)	
70%-79%	42 (36.8%)	34 (26.4%)	76 (31.3%)	
80%-89%	18 (15.8%)	46 (35.7%)	64 (26.3%)	
90%-100%	22 (19.3%)	23 (17.8%)	45 (18.5%)	
The chance a woman will become pregnant if she is aged 35-40 years				0.069
10%-19%	7 (6.1%)	4 (3.1%)	11 (4.5%)	
20%-29%	8 (7.0%)	6 (4.7%)	14 (5.8%)	
30%-39%	18 (15.8%)	14 (10.9%)	32 (13.2%)	
40%-49%	19 (16.7%)	18 (14.0%)	37 (15.2%)	
50%-59%	30 (26.3%)	28 (21.7%)	58 (23.9%)	
60%-69%	17 (14.9%)	28 (21.7%)	45 (18.5%)	
70%-79%	15 (13.2%)	21 (16.3%)	36 (14.8%)	
80%-89%	0	8 (6.2%)	8 (3.3%)	
90%-100%	0	2 (1.6%)	2 (0.8%)	
The average chance of having a child among couples that undergo treatment with in vitro fertilisation				<0.0001
10%-19%	7 (6.1%)	9 (7.0%)	16 (6.6%)	
20%-29%	6 (5.3%)	11 (8.5%)	17 (7.0%)	
30%-39%	13 (11.4%)	44 (34.1%)	57 (23.5%)	
40%-49%	17 (14.9%)	18 (14.0%)	35 (14.4%)	
50%-59%	20 (17.5%)	21 (16.3%)	41 (16.9%)	
60%-69%	10 (8.8%)	11 (8.5%)	21 (8.6%)	
70%-79%	25 (21.9%)	9 (7.0%)	34 (14.0%)	
80%-89%	12 (10.5%)	3 (2.3%)	15 (6.2%)	
90%-100%	4 (3.5%)	3 (2.3%)	7 (2.9%)	

* Data are shown as No. (%). Correct answers are shown in bold

data were summarised as frequencies and percentiles. Subgroup analyses were performed between gender and year groups, with the medical students split into junior (year 1-4) and senior (year 5-6) year groups. Junior medical students had not completed the clinical attachments of the obstetrics and gynaecology module rotation (OB-GYN), whereas senior medical students had finished the OB-GYN module in year 5. The categorical data were tested by Pearson's Chi squared test or Fisher's exact test to check for significant differences between groups. Results with P values of <0.05 were considered statistically significant.

Results

Approximately 700 Chinese medical students were approached through social networking applications and email, and 243 completed the online survey (response rate: 34.7%). Table 1 summarises the participants' demographic data. In terms of age distribution, there was no significant difference (P=0.597) between the two groups.

Awareness

Overall, 71.2% (n=173) of respondents were aware of FP strategies. Despite this, 77.8% (n=189) of respondents were not familiar with any clinics or specialists who provide FP services. Senior students showed better awareness than junior students of the above items (P<0.001). The majority (86.8%, n=211) had not heard of any regulations related to FP. Gamete and embryo freezing were the most well-known FP methods, with female students being significantly more aware than male students of those methods (P<0.003).

The majority (71.2%, n=173) responded that they would discuss the option of FP with their patients as future doctors, even if the treatment had a <30% chance of causing infertility. If a treatment had a ≥70% chance of causing infertility, nearly all (95.5%, n=232) students would discuss FP.

Knowledge

Table 2 shows the results of the questions that address knowledge about fertility and FP. Overall, there were no gender differences besides the response regarding the age range of a woman's significant fertility decline: proportionally more female students answered that item correctly (45.7% vs 38.8%; P<0.05).

Knowledge regarding FP was mainly acquired from electronic media (58.4%, n=142), medical school (57.6%, n=140), and medical professionals (38.7%, n=94). More senior students than junior students acquired fertility knowledge through medical school education (81.4% vs 30.7%; P<0.0001) and medical professionals (54.3% vs 21.1%; P<0.0001).

Most of the responding students (86.4%, n=210) wished to know more about FP, with 80.7% (n=196) of the students agreeing that there is a need to incorporate FP material into the medical curriculum.

Attitudes

Regarding attitudes, 94.2% (n=229) of medical students agreed that establishing one or two dedicated clinics or centres for FP counselling is necessary. Subgroup analysis indicated that more male medical students would like to have two dedicated centres (75.0% vs 68.2%, P=0.021). More senior than junior students agreed that FP should be available solely as a public service (89.1% vs 71.9%; P=0.001). Overall, 97.9% (n=238) of participants thought that practice guidelines for FP should be required. More than half of respondents (59.7%, n=145) agreed that there should be an age limit for FP. More female than male students agreed to set an age limit for FP (65.7% vs 51.5%, P=0.025).

Among various factors considered by medical students to determine whether to recommend FP to patients, the desire to have children (51.0%,

TABLE 3. Attitudes towards elective freezing among junior and senior medical students*

	Junior (n=114)	Senior (n=129)	Total (n=243)	P value
In general, do you agree that fertility preservation should be provided for the following reasons?				
a) Delayed family planning because of cancer treatment				0.754
Yes	112 (98.2%)	126 (97.7%)	238 (97.9%)	
No	2 (1.8%)	3 (2.3%)	5 (2.1%)	
b) Delayed family planning because of career development in women				0.586
Yes	65 (57.0%)	78 (60.5%)	143 (58.8%)	
No	49 (43.0%)	51 (39.5%)	100 (41.2%)	
c) Delayed family planning because of career development in men				0.566
Yes	59 (51.8%)	62 (48.1%)	121 (49.8%)	
No	55 (48.2%)	67 (51.9%)	122 (50.2%)	
d) Single women who want to freeze their eggs when they are young, before they find a partner				0.293
Yes	66 (57.9%)	66 (51.2%)	132 (54.3%)	
No	48 (42.1%)	63 (48.8%)	111 (45.7%)	
e) Single men who want to freeze their sperm when they are young, before they find a partner				0.084
Yes	54 (47.4%)	47 (36.4%)	101 (41.6%)	
No	60 (52.6%)	82 (63.6%)	142 (58.4%)	
f) Individuals who may have exposure to occupational hazards like radiation/chemical exposure				0.011
Yes	109 (95.6%)	111 (86.0%)	220 (90.5%)	
No	5 (4.4%)	18 (14.0%)	23 (9.5%)	
g) Men with poor semen quality who wants to have sperm frozen for future use				0.562
Yes	96 (84.2%)	105 (81.4%)	201 (82.7%)	
No	18 (15.8%)	24 (18.6%)	42 (17.3%)	
h) Couples who want to have embryos frozen for future use when it is time for a second child				0.666
Yes	49 (43.0%)	59 (45.7%)	108 (44.4%)	
No	65 (57.0%)	70 (54.3%)	135 (55.6%)	
Imagine if you were a female medical student. Would you consider egg freezing:				
a) If you had no suitable partner yet?				0.347
Yes	41 (36.0%)	54 (41.9%)	95 (39.1%)	
No	73 (64.0%)	75 (58.1%)	148 (60.9%)	
b) To focus on your career and postpone family planning?				0.604
Yes	63 (55.3%)	67 (51.9%)	130 (53.5%)	
No	51 (44.7%)	62 (48.1%)	113 (46.5%)	
Imagine if you were a male medical student. Would you consider sperm freezing:				
a) If you had no suitable partner yet?				0.380
Yes	34 (29.8%)	32 (24.8%)	66 (27.2%)	
No	80 (70.2%)	97 (75.2%)	177 (72.8%)	
b) To focus on your career and postpone family planning?				0.557
Yes	34 (29.8%)	43 (33.3%)	77 (31.7%)	
No	80 (70.2%)	86 (66.7%)	166 (68.3%)	

* Data are shown as No. (%)

TABLE 4. Attitudes towards family planning among junior and senior medical students*

	Junior (n=114)	Senior (n=129)	Total (n=243)	P value
How important is your future fertility to you?				0.268
Not important	19 (16.7%)	15 (11.6%)	34 (14.0%)	
Somewhat important	56 (49.1%)	58 (45.0%)	114 (46.9%)	
Very important	39 (34.2%)	56 (43.4%)	95 (39.1%)	
At what age do you plan to have your first child? (years)				0.337
<29	28 (24.6%)	23 (17.8%)	51 (21.0%)	
30-34	41 (36.0%)	63 (48.8%)	104 (42.8%)	
35-39	4 (3.5%)	3 (2.3%)	7 (2.9%)	
40-44	0	1 (0.8%)	1 (0.4%)	
Not interested in having children at all	17 (14.9%)	14 (10.9%)	31 (12.8%)	
I haven't really thought about that	24 (21.1%)	25 (19.4%)	49 (20.2%)	
Will you delay family planning for the following reasons? (can choose more than one)				
Career building	61 (53.5%)	82 (63.6%)	143 (58.8%)	0.112
Wanting financial security	61 (53.5%)	71 (55.0%)	132 (54.3%)	0.811
Not having a partner	71 (62.3%)	80 (62.0%)	151 (62.1%)	0.966
Not interested in having children	30 (26.3%)	32 (24.8%)	62 (25.5%)	0.788
No, I will not delay family planning	14 (12.3%)	14 (10.9%)	28 (11.5%)	0.728

* Data are shown as No. (%)

n=124), the prognosis of cancer or a medical condition (23.5%, n=57), and time available before gonadotoxic treatment (7.4%, n=18) were the most likely considerations.

Most participants (80.2%, n=195) responded that the government should subsidise FP in patients undergoing gonadotoxic treatment, with senior students expressing stronger support for subsidisation than junior students (86.0% vs 73.7%; P<0.02). More than half of the responding students agreed that the government should subsidise 30% to 50% of the cost of FP procedures including sperm (79.8%, n=194) and egg freezing (80.2%, n=195), and in vitro fertilisation (IVF) [67.9%, n=165]. More senior than junior students thought that the government should subsidise >70% of the cost of IVF (34.1% vs 20.1%; P <0.02).

Table 3 shows the respondents' attitudes towards elective and medical gamete and embryo freezing. More male students than female students expressed agreement with FP provision to men because of having no suitable partner (34.0% vs 22.1%; P<0.05). Table 4 illustrates attitudes towards family planning among the responding medical students. More male than female students were determined not to delay their family planning (16.5% vs 7.9%, P=0.037).

Discussion

With the advancement of technology, FP has become increasingly effective at enabling patients who have undergone gonadotoxic treatment to raise families. However, as shown by many previous studies on medical students' understanding of FP, this study reflects an overall worldwide tendency towards a lack of awareness and knowledge about fertility and FP.[11-13] To the best of our knowledge, this is the first study that has aimed to investigate the awareness, knowledge, and attitudes of Chinese medical students regarding fertility and FP, as well as identifying their knowledge gaps in the subject.

Awareness

The majority of Chinese medical students in Hong Kong have heard of at least one FP strategy. Senior students had significantly greater awareness than junior students of FP, reproductive techniques, and the availability of specialty clinics, likely reflecting the knowledge and exposure gained during the clinical OB-GYN module in the fifth year of study. This suggests that appropriate and timely education can improve medical students' awareness of FP.

Previous studies have shown that even brief educational interventions about FP to medical students and house staff have potential benefits.[13] To provide quality service, ASCO and ESMO guidelines suggest that patients with cancer be informed of their potential fertility decline and referred to FP services after treatment.[3,4] Most students responded that they would refer patients to FP services even if treatment had only a low risk of infertility, but they were not familiar with the actual practice of FP,

including relevant regulations and referral methods. Downloadable fact sheets on the effects of cancer treatment on fertility, available options for FP, and a list of service providers with reference costs stated should be available and accessible for proper patient education and counselling.

Knowledge

There are several misconceptions among medical students regarding knowledge about fertility and FP. The responding medical students tended to overestimate the age of the female fertility peak and the success rate of IVF and underestimate the risk of infertility in women at age 45 years (Table 2). Overestimation of female fertility has also been observed in overseas studies.[11-13,17,18] Medical students have better knowledge about female fertility than male fertility. This could be explained by the fact that there have been many more studies about the concern of female fertility decline with age. As sex education programmes at the secondary and university levels mainly emphasise pregnancy prevention education rather than infertility awareness, there may be a lack of knowledge about the impact of ageing on fertility among women.[11] Fertility-related knowledge should be included in the undergraduate medical curriculum and ideally be integrated in high school education as well to enhance public education on this topic. Beyond patient care, medical students' inadequate knowledge about this topic also has great implications for their future careers and personal lives. They may delay their own family planning for career reasons without sufficient consideration of their impending fertility decline or may have a false sense of security regarding the success rate of IVF. Therefore, more education about fertility is required, which was also supported by the respondents of our study.

Electronic media play a significant role in the promotion of FP, especially among junior students. In contrast, medical school was the main source of FP knowledge for senior students, followed by medical professionals and electronic media. This is consistent with findings in American medical students and house staff.[13] Media reports of female celebrities undergoing FP procedures, particularly egg freezing, could explain the high prevalence of student familiarity with this procedure and their lack of knowledge about other, less popular options.[19] Knowledge acquisition through both the medical curriculum and electronic media have proven to be significant, particularly in people who have not received formal education about FP. This can be applied to the general public, although it poses a risk of promoting misinformation: people could be misled into having a false sense of security regarding successful childbearing late in one's reproductive life through the use of FP methods.[11] Therefore, caution should be used to ensure that materials released through the media are accurate.

Attitudes

Most of the responding medical students would first consider the patient's desire when referring patients for FP, while 41.3% of physicians would consider the patient's prognosis first.[10] This finding could be explained by the medical students' lack of medical practice experience and doctors' awareness of resource limitations, as it has been shown that junior doctors make judgements mostly based on their own assumptions, compared with the experience-based judgements made by senior doctors.[20]

The private sector is the only current provider of FP services in Hong Kong. More male than female medical students who responded to our survey had positive attitudes towards the establishment of related facilities. The cost of freezing gametes is at least US$7800 (US$1 to HK$7.8),[21] and the median monthly household income of a 1-person family in Hong Kong is US$1282.[22] There are currently no gamete freezing subsidy programmes available. Such high costs are unaffordable to many patients, and especially patients with cancer are already financially burdened by their current treatment. In this regard, most medical students agreed that the government should subsidise FP services to patients undergoing gonadotoxic treatment, with more than half agreeing that 30% to 50% is a reasonable subsidy proportion.

There has been an increasing trend towards elective FP in recent years, which has opened up a debate about the ethicality of FP for non-medical indications and whether FP should only be provided for medical reasons. Our study reflected overwhelming support for FP for medical reasons. However, the responding medical students' opinions were mixed regarding elective freezing for non-medical indications. Only approximately half of the respondents agreed that FP should be provided to people because they have not found a suitable partner, or because they delay family planning for the sake of career development. Despite the mixed responses regarding elective freezing, Chinese medical students from Hong Kong were more supportive of elective freezing than undergraduates and medical students from the US.[23] This finding may be driven by the higher cost of FP in the US compared with that in Hong Kong.[23] Indeed, elective freezing has gained popularity in recent years. Still, the greater acceptance of FP for medical reasons echoes the healthcare-related perceptions and expectations of patients in Hong Kong: fertility is not a necessity, and FP healthcare is considered a luxury as opposed to a necessity for immediate physical well-being.

This study's participants were more supportive of elective freezing for women than men. This is likely because of their awareness that women's

fertility declines relatively earlier than that of men. Moreover, women in Hong Kong are expected to have a predominantly domestic and childrearing role within their families,[16] largely because of deeply rooted traditional Chinese familial constructs in which women tend to take on homemaking roles. However, the male medical students who responded were also concerned about their own family planning. This study's results show that more male than female medical students were determined not to delay their family planning or stated their intent to have gametes frozen because they had no suitable partner.

Most medical students agree that their future fertility is important to them. Over half of the responding medical students stated their intent to delay family planning for career development, and the majority plan to have their first child between age 30 and 34 years (the average age of residency completion is 29 years). However, few responded that they would consider undergoing FP treatments. This paradoxical response is consistent with the results of another study on Hong Kong university students that showed low inclination to seek help in the event of fertility problems compared with Western counterparts.[16] The taboo of childlessness in Chinese culture may be another reason why planning and conversation are discouraged in the event of infertility.[16] Thus, students may view FP techniques as drastic and unconventional, preferring natural conception. As discussed earlier, the lack of correct knowledge about age-related female fertility decline could also lead to such results. Medical training is long, potentially delaying doctors from starting families during their most fertile years. Education is beneficial not only to future patients, but also to current and future physicians' quality of life.

Limitations

As a form of convenience sampling, the online survey method was chosen to efficiently distribute the survey throughout the large population of medical students. However, this inherently came with limitations, including low response rate, small sample size, selection bias, and the inability to characterise non-respondents. Ideally, students of other medical schools in Hong Kong should be included to make our study more comprehensive; however, this would be logistically difficult. Because of constraints on advertising, the study consisted of slightly more senior than junior students and more female than male respondents. Moreover, our study did not specifically ask about the educational background of students that may have influenced their knowledge. However, there was no significant difference in the age distribution between the junior and senior student groups. Information bias may have also affected the responses from students who had not completed the OB-GYN module.

Conclusion

In conclusion, this study revealed important aspects of FP from the perspective of Chinese medical students in Hong Kong. In particular, we highlighted that awareness and knowledge of FP are limited among medical students. There is a strong worldwide need to increase education about and exposure of FP in the curriculum to improve medical students' knowledge. More involvement from the public sector and enhancement of facilities in terms of service provision and financial support for FP services are also needed. Given the variety of perspectives on childbearing among different cultures, this should be taken into account when doctors consider FP options for their patients and themselves. Only by increasing awareness and knowledge can more accepting attitudes towards FP arise among our doctors, allowing for better clinical outcomes and quality of life for future patients.

Author contributions

Concept or design: JPW Chung, EYL Ng.
Acquisition of data: All authors.
Analysis or interpretation of data: EYL Ng.
Drafting of the article: All authors.
Critical revision for important intellectual content: JPW Chung.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

As an editor of the journal, JPW Chung was not involved in the peer review process of the article. Other authors have no conflicts of interest to disclose.

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Ethics approval

Ethical approval for the study was obtained from the Survey and Behavioural Research Ethics Committee (Ref SBRE-18-168).

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