

Hong Kong Chinese parents' attitudes towards circumcision

Michael WY Leung 梁偉業
Paula MY Tang 鄧敏兒
Nicholas SY Chao 趙式言
Kelvin KW Liu 廖鑑榮

- Objective** To investigate Hong Kong Chinese parents' knowledge and attitudes towards phimosis and circumcision.
- Design** Questionnaire survey.
- Setting** Four primary schools in Hong Kong.
- Participants** Anonymous questionnaires were sent to Chinese parents of boys, aged 6 to 12 years old, studying in primary school Grades 1 to 6. Their social backgrounds, attitudes and beliefs towards phimosis and circumcision were enquired into.
- Results** The parents of 1479 pupils answered the questionnaire, giving a response rate of 95.8%. In all, 10.7% of schoolboys had undergone circumcision, and 11.8% of the fathers were circumcised. Regarding non-circumcised boys, 28.9% of their parents believed that their sons had phimosis and 15.6% believed they would require circumcision later. Among these parents, 57.9% would consider circumcision for their boys in public hospitals, 96.9% thought that public institutions should provide such service, and 82.6% thought that doctors' opinions were most important when deciding about circumcision. Most parents believed that circumcision could prevent balanitis (82.8%) and improve hygiene (81.8%). Significantly more parents from Mainland China and of lower social class believed that circumcision could improve cosmesis, growth of the penis, sexual potency and fertility, and prevent sexually transmitted diseases and penile cancer.
- Conclusion** Circumcision is not widely practised in Hong Kong. However, it can be a potential burden on surgical services in public hospitals. There are misconceptions concerning phimosis and circumcision, especially in parents from Mainland China and from lower socio-economic classes. Doctors' opinions are the most important factor guiding parental decisions on circumcision. Thus, family physicians' advice and education are important to avoid unnecessary circumcisions.

New knowledge added by this study

- Prevalence of circumcision in schoolboys in Hong Kong is 10.7%.
- There are misconceptions concerning phimosis and circumcisions, especially in parents born in Mainland China and of lower socio-economic class.

Implications for clinical practice or policy

- Unnecessary circumcision can cause potential burdens to surgical services in public hospitals.
- Doctors' advice and education are important to avoid unnecessary circumcision.

Key words

Attitude; Chinese; Circumcision, male; Phimosis

Hong Kong Med J 2012;18:496-501

Introduction

Circumcisions are performed globally but only a few are for medical reasons. From the American Academy of Pediatrics (AAP) policy statement in 1999, routine circumcision is not recommended.¹ Most circumcisions are performed for social, cultural and religious reasons, which vary in different countries. In the Philippines and South Korea, there is a high prevalence of non-religious circumcision (90% and 60%, respectively).² High circumcision rates are associated with different socio-economic and cultural backgrounds. Hong Kong, where 95% of the population is Chinese population, has long been influenced by the western education system and lifestyle. In this study, we evaluated the knowledge and attitudes of Chinese parents on phimosis and circumcision in relation to variations in socio-economic backgrounds.

Division of Paediatric Surgery,
Department of Surgery, Queen Elizabeth
Hospital, Jordan, Hong Kong
MWY Leung, MB, ChB, FHKAM (Surgery)
PMY Tang, MB, BS, MRCS
NSY Chao, MB, BS, FHKAM (Surgery)
Division of Paediatric Surgery,
Department of Surgery, United Christian
Hospital, Kwun Tong, Hong Kong
KKW Liu, FRCSEd, FHKAM (Surgery)

Correspondence to: Dr MWY Leung
Email: leungwym@ha.org.hk

Methods

This study was performed in 2009. From the Hong Kong Primary School profile, 225 public and aided boys/co-educational schools were identified in Hong Kong Island/Kowloon Peninsula and 220 in the New Territories. From these schools, five from each region were randomly selected and invited to join the study. Positive responses were obtained from four schools, with two from each region. Anonymous questionnaires were sent to the Chinese parents of boys studying in Grades 1 to 6 of these primary schools. The ages of the corresponding boys ranged from 6 to 12 years. Teachers distributed the questionnaires to the boys for completion by one of the parents. The circumcision history of the boys and family members were explored. The parents were asked about their knowledge and attitudes on phimosis and circumcision. Data on age of circumcision and the institution where it was performed, the parents' place of birth and education level, and family income were enquired into. The sealed questionnaires were returned to the schools and collected by the investigators for statistical analysis. Chi squared or Fisher's exact tests were performed for statistical analysis for the nominal variables. Any P value of <0.05 was considered as significant. The study was approved by the Institutional Review Board.

Results

Of 1544 questionnaires delivered, 1479 parents responded, with a response rate of 95.8%. There were 650 (43.9%) questionnaires from Hong Kong Island/Kowloon Peninsula schools, and 829 (56.1%) from New Territories schools. The ages of the boys ranged from 6 to 12 (mean, 8.6; standard deviation, 1.8) years. Fathers completed 35.1% of questionnaires. Among these parents, 65.1% had low education levels (Grade 11 or below), and 41.5% of the families had low household incomes (\leq HK\$20 000/month; US\$1 \approx HK\$7.8). In all, 24.5% of the parents were from Mainland China. Parental education levels and family incomes were significantly higher in the two schools in the Hong Kong Island/Kowloon Peninsula compared to those in the two New Territories schools ($P<0.001$). Regarding parents of boys in the New Territories schools, a greater proportion were born in Mainland China ($P<0.001$).

香港華籍父母對包皮環切術的態度

目的 探討香港華籍父母對包莖和包皮環切術的態度。

設計 問卷研究。

安排 香港四間小學。

參與者 把不記名的問卷發放給小學一至六年級、年齡介乎6至12歲的男生的華籍父母。問卷搜集有關他們的背景資料，以及對於包莖和包皮環切術的態度。

結果 共收回問卷1479份，回應率為95.8%。有10.7%男生曾接受包皮環切術，並有11.8%父親接受同樣手術。未有接受包皮環切術的男生當中，28.9%的父母相信其兒子有包莖，而15.6%相信其兒子日後需要接受包皮環切術。這些父母中，57.9%會考慮在公立醫院進行此手術，96.9%認為公立醫院應提供此類服務，而82.6%認為在決定是否接受包皮環切術時，最重要是聽取醫生的意見。大部份父母相信包皮環切術可防止龜頭炎（82.8%）和改善個人衛生（81.8%）。明顯較多來自中國大陸及較低社會階層的父母認為包皮環切術可改善外觀、陰莖生長、性能力和生育能力，以及防止感染性病及陰莖癌。

結論 包皮環切術在香港並不普遍，但此手術可以對公立醫院構成潛在壓力。社會上，尤其是來自中國大陸及較低社會階層的人士可能對包莖和包皮環切術存有誤解。而醫生的意見對於父母決定其兒子是否進行包皮環切術起了決定性的作用。為避免進行不必要的包皮環切術，家庭醫生的建議及父母的教育都非常重要。

Circumcisions were performed in 10.7% of the boys (95% confidence interval, 9.21-12.36%); 43.6% of them were performed at the age of 3 to 6 years, 29.7% at the age of 6 to 12 years, and only 7.0% were performed neonatally. Regarding these circumcisions, 42.9% were performed in public hospitals. Parents born in Mainland China, and those of lower education level and lower household incomes had their sons circumcised in public hospitals more commonly than other parents (Table 1).

Regarding parents of uncircumcised boys at the time of study, 28.9% of them thought that their sons had phimosis; 15.6% of them thought their boys would need circumcision later, and 37.6% did not know. Notably, 18.8% of responding fathers and

TABLE 1. Circumcision rates in boys under different circumstances

	Places of birth of parents		P value	Education level		P value	Monthly family income (HK\$)		P value
	Mainland China	Hong Kong		Grade 11 or below	Grade 13 or above		\leq 20 000	>20 000	
Circumcision rate	11.0%	8.2%	0.004	11.5%	10.4%	0.22	11.3%	10.6%	0.66
Circumcision done in public hospitals	61.1%	35.9%	<0.001	48.4%	27.1%	0.007	52.5%	33.7%	0.003

13.9% of responding mothers thought that their boys would eventually need circumcision (P=0.002). If circumcision was considered, 57.9% of parents wanted the operation done in public hospital, and 96.9% of all the responding parents stated that public hospitals should provide circumcision for boys with phimosis.

In all, 11.8% of the boys' fathers and 4.1% of their siblings had been circumcised. In 50.7% of the circumcised boys, at least one relative or friend had been circumcised. If the fathers or relatives/friends had a history of circumcision, more parents opted that their sons had phimosis and needed to be circumcised (Table 2).

Parents were asked about their knowledge of phimosis and attitudes towards circumcision (Table 3). The majority agreed that prepuce can protect the glans (71.7%) and would be retractable before puberty (60.4%). They thought that circumcision could promote hygiene (81.8%) and prevent balanitis (82.8%). They opined that circumcision could prevent urinary tract infection (UTI) [62.9%] but could not improve micturition (59.9%). The majority disagreed that circumcision should be performed under general anaesthesia (59.5%), but accepted that there may be postoperative complications (68.3%).

They believed that circumcision would not cause abnormal development of penis (79.5%), and would not improve cosmesis (64.9%) or penile growth (61.1%). They thought that circumcision could not improve sexual potency and fertility (76.0%), and was not useful in preventing sexually transmitted disease (STD) [76.3%] or penile cancer (72.0%).

Despite the different attitudes on phimosis and circumcision, the vast majority of parents replied that doctors should make decisions about the need for circumcision (82.6%).

There were significantly more parents from Mainland China thought that their sons had phimosis, which required circumcision, and were also inclined to have the operation done in public hospitals. Fewer parents in this group agreed that prepuce could protect glans penis. More parents agreed that circumcision could improve cosmesis of penis, penile growth, sexual potency and fertility, and decrease risk of STD and penile cancer (Table 4).

There were similar trends in attitudes among parents with lower education levels (Table 5) and lower family incomes (Table 6). More parents from lower socio-economic class believed that circumcision was free from complications.

TABLE 2. Attitudes of parents to phimosis and circumcision, in relation to father or other relatives or friends who are circumcised

	Father circumcised?		P value	Had relatives/friends circumcised?		P value
	Yes	No		Yes	No	
Parents believed their sons had phimosis	49.6%	26.5%	<0.001	34.1%	23.9%	<0.001
Parents believed their sons needed circumcision	36.2%	12.9%	<0.001	19.6%	11.9%	0.001

TABLE 3. Attitudes of parents on phimosis and circumcision (n=1479)

Statements	No. (%) of respondents		
	Agree	Disagree	Not answered
Prepuce can protect glans penis.	1061 (71.7)	347 (23.5)	71 (4.8)
Circumcision can promote penis hygiene.	1210 (81.8)	223 (15.1)	46 (3.1)
Circumcision can prevent balanitis.	1224 (82.8)	206 (13.9)	49 (3.3)
Prepuce can be retracted before puberty.	893 (60.4)	487 (32.9)	99 (6.7)
Circumcision in boys needs general anaesthesia.	529 (35.8)	880 (59.5)	70 (4.7)
Circumcision can improve micturition.	506 (34.2)	886 (59.9)	87 (5.9)
Circumcision can prevent urinary tract infection.	930 (62.9)	482 (32.6)	67 (4.5)
Circumcision can cause abnormal development of penis.	222 (15.0)	1176 (79.5)	81 (5.5)
Circumcision can improve cosmesis of penis.	432 (29.2)	960 (64.9)	87 (5.9)
Circumcision can improve penile growth.	487 (32.9)	903 (61.1)	89 (6.0)
Circumcision may have postoperative complications.	1010 (68.3)	392 (26.5)	77 (5.2)
Circumcision can improve sexual potency and fertility.	269 (18.2)	1124 (76.0)	86 (5.8)
Circumcision decreases risk of sexually transmitted disease.	253 (17.1)	1128 (76.3)	98 (6.6)
Circumcision decreases risk of penile cancer.	300 (20.3)	1065 (72.0)	114 (7.7)

TABLE 4. Attitudes of parents born in Mainland China and Hong Kong on phimosis and circumcision

Say "agree" to statements	Birth place of parents (% of respondents)		P value
	Mainland China	Hong Kong	
My son has phimosis.	30.5	28.5	0.004
My son needs circumcision.	19.1	14.6	0.008
I want my son circumcised in public hospital.	73.9	52.5	<0.001
Prepuce can protect glans penis.	68.3	78.2	0.008
Circumcision can promote penis hygiene.	86.2	83.9	0.64
Circumcision can prevent balanitis.	87.3	85.0	0.73
Prepuce can be retracted before puberty.	59.6	66.1	0.065
Circumcision in boys needs general anaesthesia.	35.1	38.7	0.347
Circumcision can improve micturition.	36.4	36.8	0.339
Circumcision can prevent urinary tract infection.	64.9	66.3	0.311
Circumcision can cause abnormal development of penis.	17.9	14.9	0.907
Circumcision can improve cosmesis of penis.	39.8	28.4	0.001
Circumcision can improve penile growth.	43.4	32.5	0.001
Circumcision may have postoperative complications.	69.4	72.7	0.504
Circumcision can improve sexual potency and fertility.	34.5	14.8	<0.001
Circumcision decreases risk of sexually transmitted disease.	33.0	13.8	<0.001
Circumcision decreases risk of penile cancer.	37.0	17.3	<0.001

TABLE 5. Attitudes of parents of different educational levels to phimosis and circumcision

Say "agree" to statements	Education level (% of respondents)		P value
	Grade 11 or below	Grade 13 or above	
My son has phimosis.	29.2	29.6	0.113
My son needs circumcision.	17.1	13.4	0.023
I want my son circumcised in public hospital.	62.5	49.6	<0.001
Prepuce can protect glans penis.	72.3	82.4	<0.001
Circumcision can promote penis hygiene.	85.2	83.2	0.307
Circumcision can prevent balanitis.	86.9	84.5	0.216
Prepuce can be retracted before puberty.	65.6	63.5	0.556
Circumcision in boys needs general anaesthesia.	39.1	34.7	0.114
Circumcision can improve micturition.	37.4	33.8	0.191
Circumcision can prevent urinary tract infection.	68.0	55.6	0.024
Circumcision can cause abnormal development of penis.	16.9	15.4	0.179
Circumcision can improve cosmesis of penis.	34.8	23.1	<0.001
Circumcision can improve penile growth.	38.6	27.8	<0.001
Circumcision may have postoperative complications.	69.4	78.4	<0.001
Circumcision can improve sexual potency and fertility.	22.0	13.1	<0.001
Circumcision decreases risk of sexually transmitted disease.	20.4	14.1	0.005
Circumcision decreases risk of penile cancer.	23.7	18.7	0.037

Discussion

Circumcision is the most commonly performed operation in children. However, the majority are performed for non-medical reasons. The circumcision rate varies greatly among different countries, in

accordance with prevailing religious and socio-economic backgrounds. To our knowledge, this is the first study concerning Hong Kong Chinese parents' attitudes to phimosis and circumcision.

In this study, 1479 questionnaires were

TABLE 6. Attitudes of parents with different family incomes to phimosis and circumcision

Say "agree" to statements	Monthly family income in HK\$ (% of respondents)		P value
	≤20 000	>20 000	
My son has phimosis.	31.5	28.3	0.001
My son needs circumcision.	18.6	14.1	0.003
I want my son circumcised in public hospital.	71.5	48.0	<0.001
Prepuce can protect glans penis.	69.8	80.0	<0.001
Circumcision can promote penis hygiene.	85.5	84.0	0.46
Circumcision can prevent balanitis.	86.9	85.4	0.441
Prepuce can be retracted before puberty.	65.6	64.5	0.475
Circumcision in boys needs general anaesthesia.	38.4	37.2	0.659
Circumcision can improve micturition.	39.8	33.7	0.023
Circumcision can prevent urinary tract infection.	67.6	64.6	0.244
Circumcision can cause abnormal development of penis.	19.0	13.6	0.013
Circumcision can improve cosmesis of penis.	37.7	26.1	<0.001
Circumcision can improve penile growth.	43.2	29.3	<0.001
Circumcision may have postoperative complications.	67.2	76.5	<0.001
Circumcision can improve sexual potency and fertility.	25.1	17.5	<0.001
Circumcision decreases risk of sexually transmitted disease.	21.8	15.2	0.002
Circumcision decreases risk of penile cancer.	27.4	18.4	<0.001

collected, giving a response rate of 95.8%. Thus, the sample size and response rate were satisfactory. However, a stratified sampling method was used such that two primary schools were selected from the Hong Kong Island/Kowloon Peninsula and two from the New Territories. As the number of sampling units from each region was small, they might not reflect the socio-economic status of the true population. Also, as this was a self-report questionnaire study, it may have validity problems since parents may not provide accurate information about their attitudes on circumcision and socio-economic status. Furthermore, the results shown in Tables 4 to 6 were only descriptive, and did not take into consideration possible confounding factors.

The circumcision rate of the primary school boys in our study was 10.7%, which was comparable to 11.8% in their fathers. In some countries like South Korea, trans-generation difference in the circumcision rate is marked.³ In Hong Kong, most children are circumcised well before puberty. Among those having the operation, neonatal circumcision accounted for only 7%. Religious circumcision among Hong Kong Chinese is not common.

The circumcision history of family members, relatives, and friends also seemed to affect parents' attitudes to phimosis and circumcision. A significantly proportion of parents thought that their sons had phimosis and needed circumcision

if the fathers, relatives and friends had also been circumcised.

More parents born in Mainland China and from lower socio-economic groups thought that their sons needed circumcision and wanted the operation to be performed in public hospitals. Notably, 96.9% of parents thought that public hospitals should provide such a service. For better allocation of public medical resources, it is important to educate parents so as to avoid unnecessary circumcision.

The majority of respondents agreed that the prepuce could protect the glans penis and could be retractable before puberty. In a Chinese study, Yang et al⁴ reported that the prevalence of a completely retractile foreskin increased from 0% at birth to 42.26% in adolescence, and that the phimosis rate decreased from 99.7% to 6.81%. Over 80% of parents opined that circumcision could improve penile hygiene and prevent balanitis. This may explain their wish to have their sons circumcised. Krueger and Osborn⁵ suggested that retraction of the foreskin during bathing is effective in preventing smegma accumulation, inflammation, and phimosis. Thus, good hygiene of the penis appears equally achievable in uncircumcised children.

There were 62.9% of parents who thought that circumcision could protect against UTI. From the AAP circumcision policy statement, the relative risk of UTI in uncircumcised infants is 4- to 10-folds greater than in those who are circumcised.¹ However, the absolute

risk of developing a UTI in an uncircumcised male infant is about 1% and 111 circumcisions have to be performed to prevent one UTI.⁶

A minority of parents believed that circumcision could improve cosmesis and enhance growth of the penis, sexual potency, and fertility. Conflicting opinions concerning the effects of circumcision on sexuality abound in different literatures.^{7,8} The American Academy of Family Physicians stated that the effect of circumcision on penile sensation or sexual satisfaction is unknown.⁹

Only 17.1% and 20.3% of parents thought that circumcision could prevent STD and penile cancer, respectively. However, significantly more parents born in Mainland China, those with lower education levels and family incomes shared these attitudes. It has been shown that circumcision may have a positive effect in terms of decreasing some STDs, such as human immunodeficiency virus and human papillomavirus infection.^{10,11} However, safe sex rather than circumcision should be considered as appropriate tool to prevent STD. Several studies have shown that incidence of penile cancer is lower in circumcised man.¹² Interestingly, in countries like Norway, Sweden, and Japan (where men are

predominantly non-circumcised), the prevalence of penile cancer is also low.¹³ The American Cancer Society stated that circumcision should not be recommended solely as a means of preventing penile cancer.¹⁴

More parents from lower social classes tended to believe that circumcision was free of complications. Although the public and medical practitioners may regard it as a minor procedure, complications including bleeding, sepsis, fistula and meatal stenosis can occur.¹⁵ The frequency of complications is directly related to surgeons' experience.¹⁶

In our study, 82.6% of parents agreed that doctors should make the decision for circumcision. Our result contrasts with a Korean survey, which stated that only 4.8% of circumcisions were suggested by health care providers.¹⁷ In a Canadian survey, it was found that circumcision was performed in 20% of instances if doctors opposed it, and 100% if they agreed.¹⁸ The advice of doctors can certainly influence parents' decisions. As suggested in the AAP circumcision policy statement, doctors should give accurate and unbiased information and provide an opportunity to discuss decisions about circumcision with parents.¹

References

1. Circumcision policy statement. American Academy of Pediatrics. Task force on circumcision. *Pediatrics* 1999;103:686-93.
2. World Health Organization, Joint United Nations Programme on HIV/AIDS (UNAIDS). Determinants of male circumcision and global prevalence. In: *Male circumcision: global trends and determinants of prevalence, safety and acceptability*. 2007. WHO website: http://whqlibdoc.who.int/publications/2007/9789241596169_eng.pdf. Accessed 9 Dec 2011.
3. Oh SJ, Kim T, Lim DJ, Choi H. Knowledge of and attitude towards circumcision of adult Korean males by age. *Acta Paediatr* 2004;93:1530-4.
4. Yang C, Liu X, Wei GH. Foreskin development in 10 421 Chinese boys aged 0-18 years. *World J Pediatr* 2009;5:312-5.
5. Krueger H, Osborn L. Effects of hygiene among the uncircumcised. *J Fam Pract* 1986;22:353-5.
6. Singh-Grewal D, Maccessi J, Craig J. Circumcision for the prevention of urinary tract infection in boys: a systematic review of randomised trials and observational studies. *Arch Dis Child* 2005;90:853-8.
7. Richters J, Smith AM, de Visser RO, Grulich AE, Rissel CE. Circumcision in Australia: prevalence and effects on sexual health. *Int J STD AIDS* 2006;17:547-54.
8. Kim D, Pang MG. The effect of male circumcision on sexuality. *BJU Int* 2007;99:619-22.
9. American Academy of Family Physicians. Circumcision: position paper on neonatal circumcision. 2007. AAFP website: <http://www.aafp.org/online/en/home/clinical/clinicalrecs/children/circumcision.html>. Accessed 9 Dec 2011.
10. Szabo R, Short RV. How does male circumcision protect against HIV infection? *BMJ* 2000;320:1592-4.
11. Van Howe RS. Human papillomavirus and circumcision: a meta-analysis. *J Infect* 2007;54:490-6.
12. Larke NL, Thomas SL, dos Santos Silva I, Weiss HA. Male circumcision and penile cancer: a systematic review and meta-analysis. *Cancer Causes Control* 2011;22:1097-110.
13. Wallerstein E. Circumcision. The uniquely American medical enigma. *Urol Clin North Am* 1985;12:123-32.
14. American Cancer Society. Can penile cancer be prevented? 2011. ACS website: <http://www.cancer.org/Cancer/PenileCancer/DetailedGuide/penile-cancer-prevention>. Accessed 9 Dec 2011.
15. Williams N, Kapila L. Complications of circumcision. *Br J Surg* 1993;80:1231-6.
16. Griffiths DM, Atwell JD, Freeman NV. A prospective study of the indications and morbidity of circumcision in children. *Eur Urol* 1985;11:184-7.
17. Ku JH, Kim ME, Lee NK, Park YH. Circumcision practice patterns in South Korea: community based survey. *Sex Transm Infect* 2003;79:65-7.
18. Patel H. The problem of routine circumcision. *Can Med Assoc J* 1966;95:576-81.