



Short communication

Validity of self-reports and reliability of spousal proxy reports on the smoking behavior of Chinese parents with young children

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Abstract

This study aims to examine the validity of self-reports and reliability of spousal proxy reports of smoking behavior among Chinese parents with young children. Agreement of self-reported smoking status with expired CO concentration among parents in the intake interview was significant with kappa at 0.70. Agreement of the mothers' and fathers' proxy reports on their spouses' smoking status and cigarette consumption by ICC were 1.0 and 0.58, and 0.82 and 0.33, respectively. Self-report and proxy reports of smoking status are considered valid and reliable to assess smoking behavior of parents with young children in Hong Kong.

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1. Introduction

With an increasing smoking-related research among the Chinese populations in Hong Kong and in Mainland China, a study on the validity of self-reported and reliability of spousal

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reports of smoking behaviors is needed. Asians in America, people aged 25–34 (Hyland, Cummings, Lynn, Corle, & Giffen, 1997) and women (Secker-Walker, Vacek, Flynn, & Mead, 1997) were identified as population groups that are likely to provide inconsistent reports of smoking status. Other studies, however, have demonstrated that proxy-reports by women of their husband's smoking status through telephone interviews are mostly accurate and reliable (Passaro, Noss, Savitz, & Little, 1997; Gilpin et al., 1994). This study aimed to examine the reliability and validity of self-report and spousal proxy for assessing the smoking behavior of parents with young children in Hong Kong.

2. Methods and data analysis

From August 2000 to January 2001, parents who brought their preschool children to the Family Health Centre in Hong Kong were invited to complete an intake questionnaire on their parents' smoking status and cigarette consumption if any and to take an expired carbon monoxide test using the Bedfont Micro II Smokerlizer (Campbell, Sanson-Fisher, & Walsh, 2001). Follow-up telephone interviews were made within 6–8 weeks to the families reported to have at least one smoking parent, and both parents were interviewed to reassess own and spouse's smoking behaviors. Agreements of the self-report smoking status and biochemical measure of expired CO concentration at the clinic, and proxy reports of spousal smoking via telephone interviews were measured by Kappa statistics or intra-class correlation coefficient.

3. Results

A total of 259 of the 280 (92.5%) eligible parents approached at the clinic completed the intake questionnaire and the expired CO test. Twenty-one parents at the clinic self-reported as smokers, and 97 reported that there were at least one smoking parents in their families. In the 97 families (194 parents), 84 families (69 couples, 2 fathers and 13 mothers, totaling 153

Table 1
Agreements of self-reported smoking status and expired CO concentration

	Self-reported smoking status	Total	CO concentration ^a		Kappa	<i>p</i>
			≤8 ppm	≥9 ppm		
Mothers (<i>n</i> =212)	nonsmokers	204	202	2	0.74	<0.001
	smokers	8	2 ^b	6		
Fathers (<i>n</i> =47)	nonsmokers	34	34	0	0.63	<0.001
	smokers	13	6 ^b	7		
Overall		259			0.70	<0.001

^a Cutoff for the CO concentration: ≤8 ppm=non-current smoker; ≥9 ppm=current smoker.

^b Two mothers were self-classified as occasional smokers and three fathers as light smokers.

Table 2
 Agreements between self-reported and spousal proxy reported smoking behavior

Proxy reports by fathers	Mother's self reports							ICC statistic				
	Nonsmokers	Smokers	Total	Cigarettes per day				Not known	Total	ICC	95%CI	p
				1–5	6–15	16–25	≥26					
Nonsmoking	61	2	63						}	0.82	0.72–0.88	<0.001
Smoking	1	4	5									
1–5 cigarettes/day								1	}	0.33	0.18–0.96	<0.001
6–15 cigarettes/day				1 ^a				1				
16–25 cigarettes/day					1			1				
≥26 cigarettes/day					1 ^a			1				
Not known			1					3				
Total	62	6	69	1	2	0	0	3	3	6		

Proxy reports by mothers	Father's self reports							ICC statistic				
	Nonsmokers	Smokers	Total	Cigarettes per day				Not known	Total	ICC	95%CI	p
				1–5	6–15	16–25	≥26					
Nonsmoking	2		2						}	1.0	–	<0.001
Smoking		67	67									
1–5 cigarettes/day				5				5	}	0.58	0.36–0.74	<0.001
6–15 cigarettes/day				4 ^a	13	4 ^b	1 ^b	22				
16–25 cigarettes/day				2 ^a	6 ^a	7	2 ^b	17				
≥26 cigarettes/day						1 ^a	2	3				
Not known								22		22		
Total	2	67	69	11	19	12	5		3	69		

^a Reported by spouses with higher cigarettes consumption than self-reported amount.

^b Reported by spouses with lower cigarettes consumption than self-reported amount.

parents) were successfully re-contacted for the follow-up, giving response rates of 87.6% families, or 78.9% (153:194) parents.

3.1. Biochemical validation of parent's self-reported smoking status

The prevalence of self-reported smoking parents ($n=21$) at the clinic were 3.8% ($n=8$) of the mothers and 27.7% ($n=13$) of the fathers. All completed the intake questionnaire and the expired CO test at the clinic. [Table 1](#) shows the agreement of the self-reported smoking status with the expired CO level. Two mothers self-reported as nonsmokers were tested with CO level ≥ 9 ppm, suggestive of active smoking, none of the fathers fall in this category. Eight self-reported smokers (two mothers and six fathers) had an expired CO of ≤ 8 ppm; two mothers were reported as occasional smokers and three fathers as light smokers. Results show significant reliability ($p < 0.0001$) of self-reported smoking status and CO level, with kappa of 0.74 and 0.63, respectively, for mothers and fathers.

3.2. Validity of smoking behavior by spousal proxy reports

[Table 2](#) shows the agreement of self-reported and spousal proxy reports of smoking status and cigarette consumption. Of the 69 matched couples who completed the follow-up questionnaires, there was a perfect agreement of the proxy reports of fathers' smoking status by the mothers with ICC=1.00, and a good agreement of the proxy reports of mothers' smoking status by fathers with ICC=0.82.

The reliabilities for cigarette consumption proxy reports were lower, arranging from 0.33 to 0.58. Half (50%, 3 out of 6) of the fathers and 31.9% (22 out of 69) of the mothers cannot report their smoking spouses' cigarette consumption. A total of 2 fathers and 13 mothers gave a higher estimation of cigarette consumption of their spouses than the self-report cigarette consumption. Another seven mothers estimated less cigarette consumption of the fathers than the self-reported amount.

4. Discussion

The agreements of self-reported smoking status and expired carbon monoxide in this study were comparable to those reported among other general populations ([Patrick, Cheadle, Thompson, Dishcr, Koepsell, & Kinne, 1994](#)). It also shows that the expired CO test lacks the sensitivity to differentiate the light, occasional or the recent ex-smokers ([Secker-Walker et al., 1997](#)).

Spousal proxy report shows to be reliable in identifying spousal smoking status. Proxy reports by the mothers are most accurate, and only a small discrepancy was found of the fathers' proxy reports. The result of this study disagree with a claim in America that Asians are likely to provide inconsistent proxy reports of household members' smoking status ([Hyland et al., 1997](#)). However, there was a lower agreement between self- and spousal reports of cigarette consumption. Either both parties tend to overestimate their spouses'

cigarette consumption or underestimate their own. When soliciting information on socially unacceptable behaviors, one may need to adopt the Bogus Pipeline method (Murray, Oconnell, Schmid, and Perry, 1987).

This study supports that self-report of smoking behavior is valid, and spousal proxy report of smoking status is a feasible and reliable method to identify smokers. Mothers with young children could be a means for clinicians and researchers to identify the smoking fathers for intervention study.

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